

# Jharkhand State Electricity Regulatory Commission



Order

on

True-Up for FY 2014-15 & FY 2015-16,  
Business Plan, Aggregate Revenue Requirement

and

Tariff for Multi Year Tariff Period from  
FY 2016-17 to FY 2020-21

for

Adhunik Power and Natural Resources Limited

(APNRL)

Ranchi

February 2018

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### List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
ARR	Aggregate Revenue Requirement
COD	Commercial Operation Date
IDC	Interest during Construction
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
JSERC	Jharkhand State Electricity Regulatory Commission
Kcal	Kilocalorie
Kg	Kilogram
kWh	Kilowatt-hour
MAT	Minimum Alternative Tax
ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
NAPAF	Normative Annual Plant Availability Factor
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
RoE	Return on Equity
Rs	Rupees
SBI	State Bank of India
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method
CERC	Central Electricity Regulatory Commission
DTS	Dedicated Transmission System

## **BEFORE**

### **Jharkhand State Electricity Regulatory Commission, Ranchi**

**Case (T) No: 15 of 2016 and 01 of 2017**

**In the matter of:**

**Petition for True-up for FY 2014-15 and FY 2015-16,  
Approval of Business Plan, ARR  
and  
Tariff for the MYT Control Period  
FY 2016-17 to FY 2020-21**

**In the matter:**

Adhunik Power and Natural Resources Limited (APNRL),  
Connaught Place, New Delhi ..... Petitioner

### **PRESENT**

**Hon'ble Dr. Arbind Prasad** - **Chairperson**  
**Hon'ble Mr. R N Singh** - **Member (Engg.)**

**Order dated 19.02.2018**

In these Petitions, Adhunik Power and Natural Resources Limited (hereinafter referred to as APNRL) has prayed for the True-up for FY 2014-15 and FY 2015-16, approval of Business Plan, Aggregate Revenue Requirement and Tariff for the MYT Control Period FY 2016-17 to FY 2020-21.

## **A1: INTRODUCTION**

### **Jharkhand State Electricity Regulatory Commission**

- 1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as “JSERC” or “the Commission”) was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational with effect from April 24, 2003.
- 1.2 The Government of Jharkhand vide its notification dated August 22, 2002 defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-
- (a) to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in section 29;
  - (b) to determine the tariff payable for the use of the transmission facilities in the manner provided in section 29;
  - (c) to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;
  - (d) to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.
- 1.3 After the Electricity Act, 2003 came into force, the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the JSERC is discharging its functions as prescribed in Section 86 of the Act.
- 1.4 In accordance with the provisions of the said Act, the JSERC discharges the following functions: -
- (a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:  
  
Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;
  - (b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;

- (c) facilitate intra-state transmission and wheeling of electricity;
- (d) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- (e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;
- (f) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
- (g) levy fee for the purposes of this Act;
- (h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;
- (i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- (j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;
- (k) discharge such other functions as may be assigned to it under this Act.

1.5 The Commission advises the State Government on all or any of the following matters, namely :-

- (a) promotion of competition, efficiency and economy in activities of the electricity industry;
- (b) promotion of investment in electricity industry;
- (c) reorganisation and restructuring of electricity industry in the State;
- (d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.

1.7 In discharge of its functions, the State Commission is guided by the National Tariff Policy framed and published by Government of India under the provisions of Section 3 of the Act. The objectives of the National Tariff Policy are to:

- (a) ensure availability of electricity to consumers at reasonable and competitive rates;
- (b) ensure financial viability of the sector and attract investments;
- (c) promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- (d) promote competition, efficiency in operations and improvement in quality of supply.

### **Adhunik Power and Natural Resources Limited**

- 1.8 Adhunik Power and Natural Resources Limited (hereinafter referred to as “the Petitioner” or “APNRL” is a company incorporated under the provisions of the Indian Companies Act, 1956.
- 1.9 Originally incorporated as “Adhunik Thermal Energy Ltd.” (ATEL), in the year 2007, ATEL was renamed to “Neepaz Thermal Energy Limited” (NTEL) and subsequently renamed as “Adhunik Power & Natural Resources Ltd.” (APNRL) in the year 2008 after complying with the applicable provisions of the Companies Act, 1956.
- 1.10 ATEL, in October 2005, had signed a Memorandum of Understanding (hereinafter referred to as “the MoU”) with Government of Jharkhand to develop a 1,000 MW coal based thermal power plant. Further in January 2007, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MOU further for a period of 12 months. In February 2008, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MOU further for a period of three years upto October 31, 2010. Subsequently in May 2011, the validity of the MOU was again extended for a period of three years from November 1, 2010 to October 31, 2013. In November 2013, the validity of MoU was again extended for a period of three years from November 1, 2013 to October 31, 2016.
- 1.11 Accordingly, APNRL has set up a 540 MW coal based power plant in Stage-1 (consisting of Unit 1 and Unit 2 of 270 MW each) and is planning to develop an additional 540 MW coal based power plant in Stage-2. Unit 1 of the power plant was synchronized on November 13, 2012 and COD for the same was declared on January 21, 2013. Unit 2 of the power plant was synchronized on March 29, 2013 and COD for the same was declared on May 19, 2013.
- 1.12 Further, as per the provisions of the MOU, the Government of Jharkhand or Distribution Licensees authorized by it will have the first right of claim on purchase upto 25% of power delivered to the system by the proposed power station.



- 1.13 Further, the extension of the MoU stipulates that the Government of Jharkhand moved to Government of India for the policy decision through suitable arrangements for making available to the State, 12% of the total power generated at variable cost, by APNRL. Hence, as stated above, as per MoU and its extension's conditions, JSEB will have first right of claim on purchase upto 25% of power delivered to the system, out of which 12% power will be made available to the state at variable cost only.
- 1.14 Pursuant to the MoU signed between Government of Jharkhand and APNRL, APNRL signed a Power Purchase Agreement (hereinafter also referred to as "the PPA") with Jharkhand State Electricity Board (now Jharkhand Urja Vikas Nigam Limited or "JUVNL") on September 28, 2012 for supplying contracted capacity of 122.85 MW (25% of 491.4 MW, i.e., gross capacity of 2 units of 270 MW each, totaling to 540 MW less normative auxiliary consumption) from Stage-1 of the Project on long term basis.
- 1.15 As per the terms of the PPA, 63.882 MW capacity, i.e., 13% of Net Capacity of Stage-1 shall be supplied to JSEB (now JUVNL) at total tariff and the balance 58.968 MW capacity, i.e. 12% of total Net Capacity of Stage-1 shall be supplied at variable cost only.
- 1.16 As per clause 3.1 (ii) and (iii) of the PPA entered into by the Petitioner and JSEB (now JUVNL), the tariff payable shall be determined by the State Commission:

*3.1(ii) "The tariff for sale of power by seller to procurer for the contracted capacity of 63.882 MW shall be payable by the procurer as determined by JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff ) Regulations, 2010 as amended from time to time or any other competent authority authorized from time to time. The annual fixed charges determined in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff ) Regulations, 2010 shall be recoverable from the net saleable capacity of 432.432 MW (i.e. Gross capacity minus auxiliary consumption minus 12% power to be supplied to procurer at energy charge)".*

*3.1(iii) The energy charge for sale of power by seller to procurer for the contracted capacity of 59.968 MW shall be payable by the procurer as determined by the JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff ) Regulations, 2010", as amended from time to time."*

## **Overview of the Thermal Station**

- 1.17 The Petitioner achieved COD of its two units of 270 MW each in the year 2013. Both these units are subject to ARR and Tariff determination. The following table summarizes the information pertaining to both the units:

S. No.	Unit	Installed Capacity(MW)	Status of Operation	Actual Date of Commercial Operation
1	Unit 1	270	Operational	January 21, 2013
2	Unit 2	270	Operational	May 19, 2013

### **The Petitioner's prayers**

1.18 The Petitioner, in its tariff petitions, has prayed before the Commission to:

- a) Approve the True-up of ARR for FY 2014-15 and FY 2015-16 for 540 MW (2x270) Stage-I coal based thermal power plant in Jharkhand, for supplying the regulated contracted capacity of 122.85MW to JUVNL/JBVNL [erstwhile JSEB];
- b) Approve the Business Plan and Multi Year Generation Tariff for supplying the regulated Contracted Capacity of 122.85 MW for both the Units 1 and 2 to Jharkhand State Electricity Board (now JUVNL) for the Control Period from FY 2016-17 to FY 2020-21
- c) Approve the proposed additional capitalization for the MYT period claimed by the Petitioner on account of schemes approved by the Commission in the previous tariff order.
- d) Approve the recovery of upward and downward variation in fuel prices and calorific value including fuel mix through Fuel Price Adjustment as part of monthly Energy Charges.
- e) Allow the petitioner to bill and recover the cost incurred towards water charges from the Discom
- f) Permit the petitioner to recover from the Discom, any additional water charges which may be imposed upon the petitioner based on the outcome of the writ petition pending before the Hon'ble High Court of Jharkhand in the matter of revision of water charges.
- g) Allow the Petitioner to bill and recover the cost incurred for transportation of fly ash in lieu with the amendment notification issued by Ministry of Environment, Forests and Climate Change on January 25th, 2016
- h) Allow the Petitioner to bill and recover the Market Operation Charges (MoC) and System Operating Charges (SoC) paid to ERLDC based on the regulations and orders of Hon'ble CERC.
- i) Allow the Petitioner to bill and recover the cost incurred towards capital spares in line with the Regulation 7.46 of JSERC Generation Regulations, 2015.
- j) To present their case prior to the finalization of the tariff order.

- k) Condone any inadvertent omissions/ errors/ rounding off difference/ shortcomings and permit the Petitioner to add/alter this filing and make further submissions as may be required by the Commission; and
- l) Pass such further and other Order, as the Commission may deem fit and proper, keeping in view the facts and circumstances of the case.

### **Scope of the Present Order**

- 1.19 The Commission, in this Order, has approved the True-up of ARR for FY 2014-15 and FY 2015-16. The Commission has also approved the Business Plan, ARR and Tariff for 2<sup>nd</sup> MYT control period from FY 2016-17 to FY 2020-21 for Unit 1 and Unit 2 of the Petitioner.
- 1.20 While approving the above, the Commission has taken into consideration the following:
  - a) Material placed on record
  - b) Provisions of the Electricity Act, 2003,
  - c) Principles laid down in the National Electricity Policy,
  - d) Principle laid down in the National Tariff Policy;
  - e) Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 (hereinafter referred to as ‘Generation Tariff Regulations, 2010’) for True-Up for FY 2014-15 and FY 2015-16;
  - f) Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2015 (hereinafter referred to as ‘Generation Tariff Regulations, 2015’) for Business Plan, ARR & Tariff Determination from FY 2016-17 to FY 2020-21.
- 1.21 Accordingly, the Commission has scrutinized the Petitions in detail and hereby issues the Order on True-up of ARR for FY 2014-15, FY 2015-16, Business Plan, ARR and Tariff from control period FY 2016-17 to FY 2020-21.

## **A2: PROCEDURAL HISTORY**

- 2.1 The Commission had notified Provisional Order on Petition for approval of Capital Cost, Business Plan and MYT Petition for FY 2012-13 to FY 2015-16 for Adhunik Power and Natural Resources Limited (APNRL) on 26th May, 2014
- 2.2 The Commission had notified Order on Petition for approval of final Capital Cost of 540MW (2x270) Coal Based Thermal Power Plant in Jharkhand, True Up of ARR for FY 2012-13 and FY 2013-14, Annual Performance Review of FY 2014-15 and ARR and Tariff Determination for FY 2015-16 on 1<sup>st</sup> September, 2016. Further, the Petitioner filed a petition on 29<sup>th</sup> September, 2016, seeking review of the Order dated September 01<sup>st</sup>, 2016. The Order, against the Review Petition, was issued by the Commission on 09, January, 2018.
- 2.3 The Petitioner had filed the instant Petition for True-up of ARR for FY 2014-15 and FY 2015-16 on 28<sup>th</sup> September, 2016. Subsequently, the Petition for approval of Business Plan, ARR & Tariff for the 2<sup>nd</sup> MYT Control Period FY 2016-17 to FY 2020-21 was filed on 31<sup>st</sup> January, 2017,

### **Information Gaps in the Petitions**

- 2.4 As part of tariff determination exercise for the Control Period, several deficiencies/information gaps were observed in the tariff petitions submitted by the Petitioner.
- 2.5 These information gaps were communicated to the Petitioner vide letter nos.
  - (a) JSERC/Case (Tariff) No. 15 of 2016 & 01 of 2017/18 dt. 26.04.2017,
  - (b) JSERC/Case (Tariff) No. 15 of 2016 & 01 of 2017/215 dt. 28.06.2017
  - (c) Email dated 13.09.2017
- 2.6 The Petitioner subsequently submitted its response to the aforesaid letters and e-mails vide letter nos.
  - (a) APNRL/PT/JSERC/2017-18/913 dt. 19.05.2017,
  - (b) APNRL/PT/JSERC/2017-18/932 dt. 16.08.2017
  - (c) APNRL/PT/JSERC/2017-18/943 dt. 13.10.2017
  - (d) Email dated 03.11.2017
- 2.7 The Commission has scrutinized the additional data/ information and on its validation, has passed this Order on the Petitions filed by the Petitioner.
- 2.8 In order to provide adequate opportunities to all stakeholders and general public, as mandated under Section 64 (3) of the Electricity Act 2003 and in relevant provisions of Regulation(s) framed by the Commission and in order to ensure transparency in the process of tariff determination, the Commission decided to hold public hearing.

## Inviting Public Comments/Suggestions

- 2.9 The Commission directed the Petitioner to make available copies of the petition to the members of general public on request, and also issue a public notice inviting comments/suggestions on the petitions for approval of True Up for FY 2014-15, FY 2015-16, Business Plan, ARR and tariff determination for the MYT control period (FY 2016-17 to FY 2020-21).
- 2.10 The aforesaid public notice was issued by the Petitioner in various newspapers and a period of twenty one (21) days was given to the members of the general public for submitting their comments/suggestions.

**Table 1 List of newspapers and dates on which the public notice by Adhunik appeared**

Sl. No.	Newspaper (Jharkhand edition)	Date of Publication
1	Rashtriya Sagar	21.09.2017 & 22.09.2017
2	Sanmarg	21.09.2017 & 22.09.2017
3	Avenue Mail	21.09.2017 & 22.09.2017
4	Morning India	21.09.2017 & 22.09.2017

- 2.11 Subsequently, the Commission also issued a notice on its website [www.jserc.org](http://www.jserc.org) and various newspapers for conducting the public hearing on the Petition. The details of the newspapers where the notice was issued by the Commission are as under:

**Table 2: List of newspapers and dates on which the public notice by JSERC appeared**

Sl. No.	Newspaper (Jharkhand edition)	Date of Publication
1	Hindustan	02.12.2017
2	Times of India	02.12.2017
3	Prabhat Khabar	03.12.2017
4	Hindustan Times	03.12.2017

## Submission of Comments/ Suggestions and conduct of Public Hearing

- 2.12 A public hearing was held on 11<sup>th</sup> December, 2017 at Ranchi and many respondents voiced their views on the petition filed by the Petitioner. The comments/ suggestions voiced by the respondents and the Petitioner's response thereon along with the Commission's views on the response provided by the Petitioner are detailed in the Section A4: of this Order.

### A3: SUMMARY OF THE PETITIONS

#### True-Up for FY 2014-15 and FY 2015-16

3.1 The true-up of ARR for FY 2014-15 and FY 2015-16, as proposed by the Petitioner, is summarised in the following table:

**Table 3: True-up of Operational Parameters and ARR submitted by the Petitioner for Unit 1 (Rs Cr)**

Particulars	Units	FY 2014-15	FY 2015-16
<b>Operational Parameters</b>			
Gross Generation	MUs	1231.24	1680.29
Aux Power Consumption	%	9%	9%
Availability	%	81.37%	75.24%
Net Generation	MU	1120.42	1529.07
Weighted Average GCV of primary fuel	kCal/kg	3338.42	3362.35
Station Heat Rate	kcal/kWh	2387	2387
Calorific value of secondary fuel	Kcal/litre	9374	9325
Specific Coal Consumption	Kg/kWh	0.712	0.707
Secondary Oil Consumption	ml/kWh	1.00	1.00
<b>Details of Annual Fixed Cost</b>			
Depreciation	Rs. Cr.	80.05	80.87
Interest on Loan	Rs. Cr.	148.39	129.94
Return on Equity	Rs. Cr.	68.06	69.79
Interest on working Capital	Rs. Cr.	25.50	30.77
O&M Expenses (including water charges)	Rs. Cr.	66.69	70.34
Cost of Secondary fuel oil	Rs. Cr.	7.92	7.77
<b>Annual Fixed Cost</b>	<b>Rs. Cr.</b>	<b>396.60</b>	<b>389.47</b>
<b>Total Variable Charge</b>	<b>Rs Cr</b>	<b>259.62</b>	<b>367.32</b>
<b>Regulated Capacity to JBVNL</b>			
Gross Capacity	MW	270	270
Auxiliary Consumption	%	9.00%	9.00%
Net Capacity	MW	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	MW	29.48	29.48
Remaining capacity from which Fixed Charges are to be recovered	MW	216.22	216.22
Total AFC	Rs. Cr	396.60	389.47
<b>Annual Fixed Charges/ MW</b>	<b>Rs./MW</b>	<b>1.83</b>	<b>1.80</b>

APNRL Order on True Up for FY 2014-15 and FY 2015-16, Business Plan, ARR and Tariff for  
MYT period FY 2016-17 to FY 2020-21

Particulars	Units	FY 2014-15	FY 2015-16
13% of Net Capacity for supply to JUVNL at full tariff	MW	31.94	31.94
AFC for 13% of Net Capacity	Rs. Cr	58.59	57.54
<b>Calculation of (Surplus)/ Gap</b>			
Net Energy Supplied to JUVNL/ JBVNL	MU	440.26	533.82
Rate of Energy Charge	Rs./kWh	2.32	2.40
AFC Entitlement on True Up	Rs. Cr	58.59	57.54
Energy Charge Entitlement upon True up	Rs. Cr	102.02	128.24
<b>Total Entitlement</b>	<b>Rs. Cr</b>	<b>160.60</b>	<b>185.78</b>
<b>Revenue Billed</b>			
AFC	Rs. Cr	60.22	64.48
EC	Rs. Cr	100.19	125.14
Incentive	Rs. Cr	-	-
<b>Total Revenue Billed to JUVNL/ JBVNL</b>	<b>Rs. Cr</b>	<b>160.41</b>	<b>189.63</b>
<b>Gap/(Surplus)</b>	<b>Rs. Cr</b>	<b>0.19</b>	<b>(3.85)</b>

**Table 4: True-up of ARR Requirement submitted by the Petitioner for FY 2015-16 for Unit 2 (Rs Cr)**

Particulars	Units	FY 2014-15	FY 2015-16
<b>Operational Parameters</b>			
Gross Generation	MUs	981.39	1245.59
Aux Power Consumption	%	9%	9%
Availability	%	98.92%	98.90%
Net Generation	MU	893.07	1133.49
Weighted Average GCV of primary fuel	kCal/kg	3485.03	3352.34
Station Heat Rate	kcal/kWh	2387	2387
Calorific value of secondary fuel	Kcal/litre	9372	9332
Specific Coal Consumption	Kg/kWh	0.682	0.709
Secondary Oil Consumption	ml/kWh	1.00	1.00
<b>Details of Annual Fixed Cost</b>			
Depreciation	Rs. Cr.	80.82	81.67
Interest on Loan	Rs. Cr.	153.16	143.03
Return on Equity	Rs. Cr.	68.66	70.46
Interest on working Capital	Rs. Cr.	22.41	25.72
O&M Expenses (including water charges)	Rs. Cr.	66.69	70.34
Cost of Secondary fuel oil	Rs. Cr.	6.23	5.82
<b>Annual Fixed Cost</b>	<b>Rs. Cr.</b>	<b>397.97</b>	<b>397.04</b>

Particulars	Units	FY 2014-15	FY 2015-16
Total Variable Charge	<b>Rs Cr</b>	<b>206.51</b>	<b>272.81</b>
<b>Regulated Capacity to JBVNL</b>			
Gross Capacity	MU	270	270
Auxiliary Consumption	%	9.00%	9.00%
Net Capacity	MU	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	MU	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	MU	216.22	216.22
Total AFC	<b>Rs. Cr</b>	397.97	397.04
Annual Fixed Charges/MW	Rs./MW	1.84	1.84
13% of Net Capacity for supply to JUVNL at full tariff	MU	31.94	31.94
AFC for 13% of Net Capacity	Rs. Cr	58.79	58.65
<b>Calculation of (Surplus)/Gap</b>			
Net Energy Supplied to JUVNL/JBVNL	MU	403.93	533.82
Rate of Energy Charge	Rs./kWh	2.31	2.41
AFC Entitlement on True Up	Rs. Cr	58.79	58.65
Energy Charge Entitlement upon True up	Rs. Cr	93.4	128.48
Total Entitlement	<b>Rs. Cr</b>	<b>152.19</b>	<b>187.13</b>
<b>Revenue Billed</b>			
AFC	Rs. Cr	56.08	62.1
EC	Rs. Cr	92.34	125.14
Incentive	Rs. Cr	-	-
Total Revenue Billed to JUVNL/JBVNL	<b>Rs. Cr</b>	<b>148.42</b>	<b>187.25</b>
Gap/(Surplus)	<b>Rs. Cr</b>	<b>3.77</b>	<b>(0.11)</b>

## Business Plan and ARR for the MYT period from FY 2016-17 to FY 2020-21

### Additional capitalization and capital structure

3.2 The details of capital expenditure proposed by APNRL during second MYT control period are given below:

**Table 5: Proposed Additional Capitalization for Unit-I and Unit-II (in Rs. Cr)**

Particulars	Hard Cost	Soft Cost	Total Cost	Year of Completion
Reservoir Construction including Land & Site Development	49.50	7.13	56.63	FY 2020-21
Grated Weir Construction	39.32	5.66	44.98	FY 2020-21



Particulars	Hard Cost	Soft Cost	Total Cost	Year of Completion
Critical Spares	30.59	4.41	35.00	FY 2020-21
Brick Making Plant	4.00	0.58	4.58	FY 2020-21
Bottom ash handling system including dewatering bin to feed HCSD system	26.54	3.82	30.36	FY 2020-21
Railway Sliding	61.23	8.82	70.05	FY 2020-21
<b>Total Cost</b>	<b>211.18</b>	<b>30.42</b>	<b>241.60</b>	<b>FY 2020-21</b>

3.3 Unit-wise details of additional capitalization proposed by the Petitioner for the second MYT Control Period are as follows:

**Table 6: Unit-Wise Proposed Additional Capitalization (Rs. Cr)**

Particulars	Unit 1	Unit 2	Total Cost	Year of Completion
Reservoir Construction including Land & Site Development	28.32	28.32	56.63	FY 2020-21
Grated Weir Construction	22.49	22.49	44.98	FY 2020-21
Critical Spares	17.50	17.50	35.00	FY 2020-21
Brick Making Plant	2.29	2.29	4.58	FY 2020-21
Bottom ash handling system including dewatering bin to feed HCSD system	15.18	15.18	30.36	FY 2020-21
Railway Sliding	35.03	35.03	70.05	FY 2020-21
<b>Total Cost</b>	<b>120.80</b>	<b>120.80</b>	<b>241.60</b>	<b>FY 2020-21</b>

### ARR for second MYT control period from FY 2016-17 to FY 2020-21

3.4 The summary of operational parameters and Aggregate Revenue Requirement as submitted by the Petitioner for Stage I (2x270 MW) of the project for the period FY 2016-17 to FY 2020-21 is as follows:

**Table 7: Operational performance and annual fixed cost from FY 2016-17 to FY 2020-21**

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
<b>Operational Parameters</b>						
Gross Generation	MUs	4020.84	4020.84	4020.84	4020.84	4020.84
Plant Load Factor	%	85%	85%	85%	85%	85%
Aux Power Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Availability	%	85%	85%	85%	85%	85%
Net Generation	MU	3658.96	3658.96	3658.96	3658.96	3658.96
Weighted Average GCV of primary fuel	kCal/kg	3,408	3,403	3,403	3,403	3,403

APNRL Order on True Up for FY 2014-15 and FY 2015-16, Business Plan, ARR and Tariff for  
MYT period FY 2016-17 to FY 2020-21

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
Station Heat Rate	kcal/kWh	2,387	2,387	2,387	2,387	2,387
Specific Coal Consumption	Kg/kWh	0.698	0.699	0.699	0.699	0.699
Secondary Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
<b>Details of Annual Fixed Cost</b>						
Depreciation	Rs. Cr.	162.93	162.93	162.93	162.93	169.31
Interest on Loan	Rs. Cr.	260.27	238.03	215.79	193.56	182.42
Return on Equity	Rs. Cr.	140.25	140.25	140.25	140.25	145.86
Interest on working Capital	Rs. Cr.	63.66	66.47	68.77	71.22	74.28
O&M Expenses (including water charges)	Rs. Cr.	149.40	158.59	168.36	178.75	189.79
<b>Annual Fixed Cost</b>	<b>Rs. Cr.</b>	<b>776.50</b>	<b>766.26</b>	<b>756.10</b>	<b>746.70</b>	<b>761.67</b>
<b>Total Variable Charge</b>	<b>Rs./kWh</b>	<b>2.462</b>	<b>2.625</b>	<b>2.756</b>	<b>2.894</b>	<b>3.038</b>
Regulated Capacity to JBVNL						
Gross Capacity	MU	540.00	540.00	540.00	540.00	540.00
Auxiliary Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	MU	491.4	491.40	491.40	491.40	491.40
12% of net capacity for supply to JUVNL at Energy Charge	MU	58.97	58.97	58.97	58.97	58.97
Remaining Capacity from which Fixed Charges are to be recovered	MU	432.43	432.43	432.43	432.43	432.43
<b>Total AFC</b>	<b>Rs. Cr</b>	<b>776.51</b>	<b>766.27</b>	<b>756.10</b>	<b>746.70</b>	<b>761.67</b>
Annual Fixed Charges/MW	Rs./MW	1.80	1.77	1.75	1.73	1.76
13% of Net Capacity for supply to JUVNL at full tariff	MU	63.88	63.88	63.88	63.88	63.88
AFC for 13% of Net Capacity	Rs. Cr	114.71	113.20	111.70	110.31	112.52

*\*AFC is exclusive of amount recoverable towards cost of capital spares and cost of transportation of fly ash. The same would be billed and recovered separately.*

3.5 The Petitioner has submitted revised (unit-wise) information in subsequent submissions which are summarized as follows:

**Table 8: Revised Operational performance and annual fixed cost from FY 2016-17 to FY 2020-21 for Unit 1**

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
<b>Operational Parameters</b>						
Gross Generation	MUs	2010.42	2010.42	2010.42	2010.42	2010.42
Plant Load Factor	%	85%	85%	85%	85%	85%

APNRL Order on True Up for FY 2014-15 and FY 2015-16, Business Plan, ARR and Tariff for  
MYT period FY 2016-17 to FY 2020-21

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
Aux Power Consumption	%	9%	9%	9%	9%	9%
Availability	%	85%	85%	85%	85%	85%
Net Generation	MU	1829.48	1829.48	1829.48	1829.48	1829.48
Weighted Average GCV of primary fuel	kCal/kg	3408	3403	3403	3403	3403
Station Heat Rate	kcal/kWh	2387	2387	2387	2387	2387
Specific Coal Consumption	Kg/kWh	0.698	0.699	0.699	0.699	0.699
Secondary Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
<b>Details of Annual Fixed Cost</b>						
Depreciation	Rs. Cr.	81.06	81.06	81.06	81.06	84.25
Interest on Loan	Rs. Cr.	127.92	116.86	105.79	94.72	89.21
Return on Equity	Rs. Cr.	69.79	69.79	69.79	69.79	72.60
Interest on working Capital	Rs. Cr.	31.83	33.23	34.38	35.61	37.14
O&M Expenses (including water charges)	Rs. Cr.	74.70	79.29	84.18	89.37	94.89
<b>Annual Fixed Cost</b>	<b>Rs. Cr.</b>	<b>385.30</b>	<b>380.23</b>	<b>375.21</b>	<b>370.56</b>	<b>378.10</b>
<b>Total Variable Charge</b>	<b>Rs./kWh</b>	<b>2.462</b>	<b>2.625</b>	<b>2.756</b>	<b>2.894</b>	<b>3.038</b>
Regulated Capacity to JBVNL						
Gross Capacity	MU	270	270	270	270	270
Auxiliary Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	MU	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	MU	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	MU	216.22	216.22	216.22	216.22	216.22
<b>Total AFC</b>	<b>Rs. Cr</b>	<b>385.30</b>	<b>380.24</b>	<b>375.21</b>	<b>370.56</b>	<b>378.10</b>
Annual Fixed Charges/MW	Rs./MW	1.78	1.76	1.74	1.71	1.75
13% of Net Capacity for supply to JUVNL at full tariff	MU	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	Rs. Cr	56.92	56.17	55.43	54.74	55.86

**Table 9: Operational performance and annual fixed cost from FY 2016-17 to FY 2020-21 for Unit 2**

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
<b>Operational Parameters</b>						
Gross Generation	MUs	2010.42	2010.42	2010.42	2010.42	2010.42
Plant Load Factor	%	85%	85%	85%	85%	85%
Aux Power Consumption	%	9%	9%	9%	9%	9%
Availability	%	85%	85%	85%	85%	85%
Net Generation	MU	1829.48	1829.48	1829.48	1829.48	1829.48
Weighted Average GCV of primary fuel	kCal/kg	3408	3403	3403	3403	3403
Station Heat Rate	kcal/kWh	2387	2387	2387	2387	2387
Specific Coal Consumption	Kg/kWh	0.698	0.699	0.699	0.699	0.699
Secondary Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
<b>Details of Annual Fixed Cost</b>						
Depreciation	Rs. Cr.	81.87	81.87	81.87	81.87	85.05
Interest on Loan	Rs. Cr.	132.36	121.18	110.01	98.83	93.21
Return on Equity	Rs. Cr.	70.46	70.46	70.46	70.46	73.26
Interest on working Capital	Rs. Cr.	31.83	33.23	34.38	35.61	37.14
O&M Expenses (including water charges)	Rs. Cr.	74.70	79.29	84.18	89.37	94.89
<b>Annual Fixed Cost</b>	<b>Rs. Cr.</b>	<b>391.21</b>	<b>386.03</b>	<b>380.89</b>	<b>376.14</b>	<b>383.57</b>
<b>Total Variable Charge</b>	<b>Rs./kWh</b>	<b>2.462</b>	<b>2.625</b>	<b>2.756</b>	<b>2.894</b>	<b>3.038</b>
<b>Regulated Capacity to JBVNL</b>						
Gross Capacity	MU	270	270	270	270	270
Auxiliary Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	MU	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	MU	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	MU	216.22	216.22	216.22	216.22	216.22
<b>Total AFC</b>	<b>Rs. Cr</b>	<b>391.21</b>	<b>386.03</b>	<b>380.89</b>	<b>376.14</b>	<b>383.57</b>
Annual Fixed Charges/MW	Rs./MW	1.81	1.79	1.76	1.74	1.77

Particulars	Units	FY 17	FY18	FY 19	FY 20	FY 21
13% of Net Capacity for supply to JUVNL at full tariff	MU	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	Rs. Cr	57.79	57.03	56.27	55.57	56.66

### Tariff for supply of energy to JUVNL

- 3.6 The tariff for supply of regulated capacity to JUVNL (erstwhile JSEB) for the second Control Period at Normative Availability submitted by the Petitioner in its petition is summarised in the tables below:

**Table 10: Fixed Charges and rate of Energy Charges for JUVNL for Unit 1 & Unit 2**

Particulars	Units	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Capacity Charges for 13% of Capacity at 85% Plant Availability Factor	Rs Crore	114.71	113.20	111.70	110.31	112.52
Rate of Energy Charges	Rs/kWh	2.462	2.625	2.756	2.894	3.038
<b>Total Tariff (Capacity Charges + Energy Charges)</b>	<b>Rs./kWh</b>	<b>3.716</b>	<b>3.863</b>	<b>3.977</b>	<b>4.099</b>	<b>4.268</b>

- 3.7 The Petitioner has submitted additional information in subsequent submissions as mentioned in paragraph 2.6 which have also been considered by the Commission while passing this Order.

#### **A4: PUBLIC CONSULTATION PROCESS**

- 4.1 A public hearing was held on 11<sup>th</sup> December, 2017 at Ranchi and many respondents voiced their views on the petition filed by the Petitioner. The list of the attendees is attached as **Annexure- 1** to this Order.
- 4.2 During the public hearing, the Commission also allowed persons/representatives of entities who had not submitted prior written representations but attended the public hearings to express their views, in person, regarding the Petitions filed by the Petitioner.
- 4.3 The comments and suggestion of the members of the public along with the response thereon of the Petitioner and the views of the Commission are detailed hereunder:

#### **Capital cost of the project**

##### *Public comments/ suggestions*

- 4.4 JBVNL submitted that the Petitioner has claimed opening balance of GFA of Rs 3,314.24 Cr against the approved GFA (capital cost) of Rs 3,271.49 Cr as approved by the Commission in the last Tariff Order. JBVNL submitted that though the Petitioner has filed a review Petition against Commission's last Order, the Commission is yet to issue an Order against the review Petition and hence the capital cost as approved by the Commission in the last Tariff Order i.e. Rs 3314.24 Cr should be considered for tariff computation.

##### *Petitioner's submission*

- 4.5 The Petitioner submitted that it has considered the capital cost taking into consideration the issues raised by it in the Review Petition. The final decision of the Commission shall form the basis for tariff computation.

##### *Commission's view*

- 4.6 The Commission, on 09 January, 2018, has notified the Order against the review petition filed by the Petitioner. The capital cost approved in the Order has been considered as the base for the tariff computation in the relevant years.

## **Allowable Incentive**

### *Public comments/ suggestions*

- 4.7 JBVNL submitted that the Generation Tariff Regulations, 2015 allow incentive for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF). The PLF ought to be considered as per CERC guidelines as per which the whole plant capacity has to be considered for computation of incentive.
- 4.8 However, the Petitioner has considered the contracted capacity of 122.85 MW against the total capacity of 540 MW for calculation of incentive to be taken from JBVNL.

### *Petitioner's submission*

- 4.9 The Petitioner submitted that as per the PPA signed between the Petitioner and JBVNL, Availability has been defined in respect of contracted capacity and not installed capacity. Hence, there is no error in claiming incentive on the basis of contracted capacity.

### *Commission's view*

- 4.10 The Commission has considered the calculation of incentive strictly as per the provisions specified in JSERC (Generation Tariff) regulations, 2010 as well as JSERC (Generation Tariff ) Regulations, 2015. In accordance with the PPA signed by the Petitioner with JBVNL, Incentive calculation has been done based on approved availability, of the generation station of the petitioner, as certified by the SLDC.

## A5: TRUE UP FOR FY 2014-15 & FY 2015-16

### Operational Parameters

#### Availability

##### *Petitioner's submission*

- 5.1 The Petitioner, in its true up petition, did not submit the availability for Unit 1 and Unit 2 separately. Subsequently, in reply to one of the discrepancy notes raise by the Commission, the Petitioner submitted the availability certificate for FY 2014-15 and FY 2015-16 i.e. 77.97% and 98.77% respectively.

##### *Commission's Analysis*

- 5.2 Regulation 8.6 of the Generation Tariff Regulations, 2010 prescribes the norm for approving the availability of a new generating station.

*"8.6 The norms of operation for generating stations other than existing stations shall be as under:*

*(a) Normative Annual Plant Availability Factor (NAPAF): All thermal generating stations, NAPAF shall be 85%."*

- 5.3 Accordingly, the Commission approves availability for FY 2014-15 and FY 2015-16 at 77.97% and 98.77% respectively.
- 5.4 The recovery of capacity charges below the level of NAPAF (during FY 2014-15) shall be on pro-rata basis while the Petitioner shall be entitled to an incentive for plant availability exceeding NAPAF during FY 2015-16 in accordance with Regulation 8.12 of the Generation Tariff Regulations, 2010.

### Generation

##### *Petitioner's submission*

- 5.5 The Petitioner submitted that it had signed PPA with JUVNL/ JBVNL (earlier JSEB) for the 122.85 MW capacity (25% of 491.4 MW, i.e., Gross Capacity of 2 Units of 270 MW each, totalling to 540 MW less Normative Auxiliary Consumption).
- 5.6 The gross generation submitted by the Petitioner is shown in the following table:

**Table 11 Generation Capacity submitted by the Petitioner**

Description	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Gross Capacity	MW	270	270	270	270
Gross Generation	MU	1231.24	1680.29	981.39	1245.59



*Commission's Analysis*

- 5.7 The Commission has considered the actual PLF as submitted by the Petitioner (for Unit 1 and Unit 2) for arriving at the gross generation.
- 5.8 Accordingly, the table below shows the gross generation approved by the Commission for both the unit towards true up of FY 2014-15 and FY 2015-16:

**Table 12 Gross generation (in MUs) approved by the Commission**

Description	FY 2014-15			FY 2015-16		
	Approved in APR	Petitioner Submission	Approved in True-up	Approved in MYT	Petitioner Submission	Approved in True-up
Unit 1	1227.07	1231.24	1231.24	2010.42	1680.29	1680.29
Unit 2	985.34	981.39	981.39	2010.42	1245.59	1245.59

**Auxiliary Consumption, Station heat rate and Secondary Fuel Oil Consumption**

*Petitioner's submission*

- 5.10 The Petitioner submitted the actual auxiliary consumption for Unit 1 at 9.74% for FY 2014-15 and at 9.62% for FY 2015-16. Further, the Petitioner submitted the auxiliary consumption for Unit 2 at 9.70% for FY 2014-15 and at 8.09% for FY 2015-16. However, for the purpose of computation of tariff, the Petitioner has considered the normative auxiliary consumption of 9.00% for both units 1 and 2 for FY 2014-15 as well as for FY 2015-16.
- 5.11 The Petitioner in the petition has submitted that the Station Heat Rate for both Unit 1 and Unit 2 at 2,387 kCal/kWh for FY 2014-15 as well as FY 2015-16.
- 5.12 The Petitioner also submitted the secondary fuel oil consumption for both Unit 1 and Unit 2 at 1 ml/kWh for FY 2014-15 as well as FY 2015-16.

*Commission's Analysis*

- 5.13 Regulation 8.6 of the Generation Tariff Regulations, 2010 prescribes the norm for approving the operational parameters including auxiliary consumption, station heat rate and secondary fuel oil consumption of a generating station:

***“Auxiliary Energy Consumption***

***8.6(c) (i) Coal Based generating Stations***

	<i>With Natural Draft cooling Tower or without cooling towers</i>	8.50%
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500 MW Series- Steam Driven Boiler Feed Pumps	With Natural Draft cooling Tower or without cooling towers	6%
500 MW Series- Electrically driven Boiler Feed Pumps	With Natural Draft cooling Tower or without cooling towers	8.50%

Provided further that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%:

**(b) Gross Station Heat Rate:**

(i) Coal-based and lignite-fired Thermal Generating Stations = 1.065 X Design Heat Rate (kCal/kWh)

Where, the Design Heat Rate of a unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating(kg/cm <sup>2</sup> )	150	170	170	247	247
SHT/RHT (0C)	535/535	537/537	537/565	537/565	565/593
Type of BFP	Electrical Driven	Turbine driven	Turbine Driven	Turbine Driven	Turbine Driven
Max Turbine Cycle Heat rate (kCal/kWh)	1955	1950	1935	1900	1850
Min. Boiler Efficiency					
Sub-Bituminous Indian Coal	0.85	0.85	0.85	0.85	0.85
Bituminous Imported Coal	0.89	0.89	0.89	0.89	0.89
Max Design Unit Heat rate (kCal/kWh)					
Sub-Bituminous	2300	2294	2276	2235	2176

<i>Indian Coal</i>					
<i>Bituminous Imported Coal</i>	2197	2191	2174	2135	2079

***Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken;***

***Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;***

*Provided also that if one or more units were declared under commercial operation prior to 1.4.2011, the heat rate norms for those units as well as units declared under commercial operation on or after 1.4.2012 shall be lower of the heat rate norms arrived at by above methodology and the norms as per clause 8.4 of these Regulations;*

*Note: In respect of units where the boiler feed pumps are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP.*

...

***(d) Secondary Fuel Oil Consumption for Coal based generating stations: 1.0 ml/kWh.”***

- 5.14 The Commission approves the auxiliary consumption as per the norms towards True up of FY 2014-15 and FY 2015-16. Hence, the auxiliary consumption is approved at 9.00%.
- 5.15 The Commission has arrived at the heat rate of 2387 kCal/ kWh as per the same methodology followed in the previous tariff order and accordingly approves the same.
- 5.16 The Commission approves the secondary fuel oil Consumption at 1 ml/kWh as specified in the regulation cited in paragraph 5.13 above.

### **Coal Mix, Coal Cost, Transit loss and GCV**

#### *Petitioner’s submission*

- 5.17 In its Petition for true up for FY 2014-15 and FY 2015-16, the Petitioner submitted the following coal mix for Unit 1 and Unit 2:

**Table 13 Coal Mix for FY 2014-15 and FY 2015-16 submitted by the Petitioner**

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Domestic Coal-Linkage	51.00%	45.00%	57.00%	44.00%
Domestic Coal-Spot Market	36.00%	45.00%	19.00%	46.00%
Washery Rejects	7.00%	7.00%	8.00%	7.00%
Imported Coal	6.00%	3.00%	16.00%	3.00%

5.18 With regards to the landed cost of coal, the submission of the Petitioner is summarised in the following table as shown below:

**Table 14 Landed Cost of coal (Rs/ MT) for FY 2014-15 and FY 2015-16 submitted by the Petitioner**

Particulars	Unit 1		Unit 2	
	2014-15	2015-16	2014-15	2015-16
Domestic Coal-Linkage	2511	2556	2511	2556
Domestic Coal-Spot Market	3582	3245	3582	3245
Washery Rejects	1561	4900	1561	4900
Imported Coal	4232	3961	4232	3961

5.19 With regards to the GCV of coal, the Petitioner submitted the GCV of coal from various sources as shown in the following table:

**Table 15 GCV of coal (kCal/kg) from various sources for FY 2014-15 and FY 2015-16 submitted by the Petitioner**

Particulars	Unit 1		Unit 2	
	2014-15	2015-16	2014-15	2015-16
Domestic Coal-Linkage	3766	3627	3748	3636.50
Domestic Coal-Spot Market	3034	3149	3058	3064
Washery Rejects	1771	3800	1778	3800
Imported Coal	3659	3742	3667	3751

### *Commission's Analysis*

5.20 The Petitioner was allotted a captive coal block (Ganeshpur) along with Tata Steel for supply of coal to the power plant. However, the captive mine allocation to the Petitioner was cancelled after the judgement made by Hon'ble Supreme Court on writ petition (CRL) No 120 of 2012. As per the latest information submitted by the Petitioner, the Petitioner has obtained a tapering coal linkage from Coal India limited and fuel supply agreements have been signed with Central Coal fields Ltd. Petitioner also submitted that it is forced to meet its coal requirement through combination of tapering linkage, spot market, washery rejects and imported coal.

- 5.21 The Commission understands that the captive coal block allocated to the Petitioner has been cancelled vide the Supreme Court judgement stated as above. Hence, the Petitioner is largely depending on the domestic linkage by means of tapering linkage with CCL.
- 5.22 Meanwhile, the Commission observes that the Petitioner primarily used domestic coal from the CCL linkage and spot market to meet its coal requirements during FY 2014-15 and FY 2015-16. The Petitioner has also used some amount of washery rejects and imported coal in FY 2014-15 and FY 2015-16
- 5.23 Based on the month wise and unit wise actual data provided by the Petitioner, the Commission approves the following coal mix towards true up of FY 2014-15 and FY 2015-16 is shown in the table below:

**Table 16 Coal Mix for Unit 1 for FY 2014-15 and FY 2015-16 approved by the Commission**

Coal Mix	As Approved in MYT	As Per Petition	Approved by JSERC		As Approved in MYT	As Per Petition	Approved by JSERC	
	2014-15				2015-16			
Domestic Coal-Linkage	51.23%	51.00%	440270 MT	50.69%	50.00%	45.00%	531436 MT	45.03%
Domestic Coal-Spot Market	34.17%	36.00%	312363 MT	35.96%	30.00%	45.00%	525839 MT	44.55%
Washery Rejects	7.16%	7.00%	60280 MT	6.94%	10.00%	7.00%	83650 MT	7.09%
Imported Coal	7.44%	6.00%	55627 MT	6.40%	10.00%	3.00%	39364 MT	3.34%

**Table 17 Coal Mix for Unit 2 for FY 2014-15 and FY 2015-16 approved by the Commission**

Coal Mix	As Approved in MYT	As Per Petition	Approved by JSERC		As Approved in MYT	As Per Petition	Approved by JSERC	
	2014-15				2015-16			
Domestic Coal-Linkage	49.91%	57.00%	383323 MT	57.37%	50.00%	44.00%	393162 MT	44.21%
Domestic Coal-Spot Market	32.37%	19.00%	124836 MT	18.68%	30.00%	46.00%	412140 MT	46.34%
Washery Rejects	5.16%	8.00%	56046 MT	8.39%	10.00%	7.00%	60661 MT	6.82%
Imported Coal	12.55%	16.00%	103953 MT	15.56%	10.00%	3.00%	23339 MT	2.62%

- 5.24 The Commission approves normative transit loss of 0.8% for coal procured from domestic sources in accordance with Generation Tariff Regulations, 2010. The Commission also notes that the Central Commission, in the CERC (Terms and Conditions of Tariff) Regulations, 2014, has set a norm of 0.2% for transit loss on imported coal. The Commission approves the same for the imported coal used by the plant.

**Table 18 Coal Cost (Rs/MT) of Unit 1 approved by the Commission**

Particulars	As Approved in APR	As Per Petition	Approved by JSERC (Exc. Transit Loss)	Approved by JSERC (Inc. Transit Loss)	As Approved in ARR	As Per Petition	Approved by JSERC (Exc. Transit Loss)	Approved by JSERC (Inc. Transit Loss)
			2014-15				2015-16	
Domestic Coal-Linkage	2418	2511	2511	2531	2438	2556	2556	2576
Domestic Coal-Spot Market	3471	3582	3582	3610	3526	3245	3245	3271
Washery Rejects	1766	1561	1561	1573	1720	4900	4900	4940
Imported Coal	4185	4232	4232	4241	4212	3961	3961	3969

**Table 19 Coal Cost (Rs/MT) of Unit 2 approved by the Commission**

Particulars	As Approved in APR	As Per Petition	Approved by JSERC (Exc. Transit Loss)	Approved by JSERC (Inc. Transit Loss)	As Approved in ARR	As Per Petition	Approved by JSERC (Exc. Transit Loss)	Approved by JSERC (Inc. Transit Loss)
			2014-15				2015-16	
Domestic Coal-Linkage	2459	2511	2511	2531	2438	2556	2556	2576
Domestic Coal-Spot Market	3580	3582	3582	3610	3526	3245	3245	3271
Washery Rejects	1674	1561	1561	1573	1720	4900	4900	4940
Imported Coal	4240	4232	4232	4241	4212	3961	3961	3969

**Table 20 GCV (Kcal/Kg) of coal for Unit 1 approved by the Commission**

Particulars	As Approved in APR	As Per Petition	Approved by JSERC	As Approved in ARR	As Per Petition	Approved by JSERC
Domestic Coal-Linkage	3754	3766	3766	3748	3627	3627
Domestic Coal-Spot Market	3102	3034	3034	3125	3149	3149
Washery Rejects	1760	1771	1771	1753	3800	3800
Imported Coal	3610	3659	3659	3615	3742	3742

**Table 21 GCV (Kcal/Kg) of coal for Unit 2 approved by the Commission**

Particulars	As Approved in APR	As Per Petition	Approved by JSERC	As Approved in ARR	As Per Petition	Approved by JSERC
Domestic Coal-Linkage	3742	3748	3748	3748	3637	3637
Domestic Coal-Spot Market	3148	3058	3058	3125	3064	3064
Washery Rejects	1746	1778	1778	1753	3800	3800
Imported Coal	3621	3667	3667	3615	3751	3751

## Base Energy Charge Rate (ECR) and Cost of Primary Fuel

### *Petitioner's submission*

- 5.25 The Petitioner has computed the energy charge for the purpose of trueing up based on actual generation, normative auxiliary consumption, normative heat rate and normative secondary fuel oil consumption for the period FY 2014-15 & FY 2015-16.
- 5.26 The Petitioner had raised the energy bills to Discom, for the FY 2014-15 and FY 2015-16, in line with the energy charge approved by the Hon'ble Commission in its Order dated May 26, 2014, wherein it had approved an energy charge of Rs. 2.071 per kWh for FY 2014-15 & FY 2015-16 for both Unit 1 and 2 of the power plant.
- 5.27 The Petitioner has submitted the following claim towards base energy charge rate of both units towards true up as shown below:

**Table 22 Energy Charge Rate submitted by the Petitioner for FY 2014-15**

Particulars	Units	Unit 1	Unit 2
<b>Operational Parameters</b>			
Normative Aux Consumption	%	9.00%	9.00%
Heat Rate	kCal/ kWh	2387	2387
Specific Oil Consumption	ml/kWh	1.00	1.00
Secondary Oil Consumption	kL/year	1231.24	981.39
Calorific Value of Oil	kCal/L	9374	9325
Coal			
Weighted Average Calorific Value of Indian Coal	kCal/kg	3338.42	3485.03
Weighted Average cost of Indian Coal	Rs/Tonne	2960.68	3084.26
<b>Energy Charge rate</b>	Rs/kWh	2.317	2.312

**Table 23 Energy Charge Rate submitted by the Petitioner for FY 2015-16**

Particulars	Units	Unit 1	Unit 2
<b>Operational Parameters</b>			
Normative Aux Consumption	%	9%	9%
Heat Rate	kCal/ kWh	2387	2387
Specific Oil Consumption	ml/kWh	1.00	1.00
Secondary Oil Consumption	kL/year	1680.29	1245.59
Calorific Value of Oil	kCal/L	9372	9332
Coal			
Weighted Average Calorific Value of Indian Coal	kCal/kg	3362.35	3352.34
Weighted Average cost of Indian Coal	Rs/Tonne	3091.39	3088.03
<b>Energy Charge rate</b>	Rs/kWh	2.402	2.407

### *Commission's Analysis*

5.28 As per the Generation Tariff Regulation, 2010, the energy (variable) charge shall cover primary fuel costs and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month.

5.29 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Regulation 8.17 and 8.18 of the Generation Tariff Regulation, 2010 as quoted below:

*“8.17 Total Energy charge payable to the Generating Company for a month shall be: =*

*(Energy charge rate in Rs. /kWh) x {Scheduled energy (ex-bus) for the month in kWh.}*

*8.18 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formula:*

*(a) For coal based stations*

$$ECR = (GHR - SFC \times CVSF) \times LPPF \times 100 / \{CVPF \times (100 - AUX)\}$$

*Where, AUX - Normative auxiliary energy consumption in percentage*

*CVPF - Gross calorific value of primary fuel as fired, in KCal per kg, per litre or per standard cubic metre, as applicable.*

*CVSF - Calorific value of secondary fuel, in KCal per ml*

*ECR - Energy charge rate, in Rupees per kWh sent out.*

*GHR - Gross station heat rate, in kCal per kWh.*

*LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.*

*SFC - Specific fuel oil consumption, in ml per kWh”*

5.30 The Commission has further considered the landed price of primary fuel inclusive of transit loss of 0.80% (for domestic coal) and 0.20% (for imported coal).

5.31 Accordingly, the Commission has calculated the base ECR for the Control Period as per the formula stated above and after considering the operational parameters as approved in this order. The table below contain the base ECR approved by the Commission for the FY 2014-15 & FY 2015-16:



**Table 24 Approved Energy Charge Rate for Unit 1**

Particulars	Units	Approved in APR Order	Submitted by APNRL FY 2014-15	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL FY 2015-16	Approved True Up By JSERC
Gross Generation	%	1227.07	1231.24	1231.24	2010.42	1680.29	1680.29
Heat Rate	kCal/kWh	2387	2387	2387	2387	2387	2387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	kCal/L	9347	9374	9374	9347	9325	9325
Weighted Average Calorific Value of Coal	kCal/kg	3377	3338	3357	3348	3362	3430
Weighted Average cost of Coal (including transit loss)	Rs/Tonne	2862	2961*	2962	2870	3091*	3100
<b>Energy Charge rate</b>	<b>Rs/kWh</b>	<b>2.192</b>	<b>2.317</b>	<b>2.305</b>	<b>2.217</b>	<b>2.402</b>	<b>2.361</b>

\*Petitioner has submitted cost of coal excluding transit loss

**Table 25 Approved Energy Charge Rate for Unit 2**

Particulars	Units	Approved in APR Order	Submitted by APNRL FY 2014-15	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL FY 2015-16	Approved True Up By JSERC
Gross Generation	%	985.34	981.39	981.39	2010.42	1245.59	1245.59
Heat Rate	kCal/kWh	2387	2387	2387	2387	2387	2387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	kCal/L	9347	9372	9372	9347	9332	9332
Weighted Average Calorific Value of Coal	kCal/kg	3431	3485	3441	3348	3352	3386
Weighted Average cost of Coal (including transit loss)	Rs/Tonne	3005	3084*	2918	2870	3088*	3096
<b>Energy Charge rate</b>	<b>Rs/kWh</b>	<b>2.265</b>	<b>2.312</b>	<b>2.216</b>	<b>2.217</b>	<b>2.407</b>	<b>2.389</b>

\*Petitioner has submitted cost of coal excluding transit loss

## Determinants of Fixed Charges

### Capital Cost and Additional Capitalization

#### *Petitioner's submission*

- 5.32 The Petitioner in its Petition has submitted that the capital cost of the power plant is to the tune of Rs. 3,344.21 Crore based on the audited accounts for FY 2013-14. Accordingly, for the purpose of Truing-up of Annual Capacity Charges for FY 2014-15, the Petitioner, in the instant petition has considered the opening value of Gross Fixed Assets for FY 2014-15 at Rs. 3,314.24 Crore after netting off the closing work in progress of Rs. 29.97 crore, as disallowed by the Hon'ble Commission in its True-up Order dated September 1, 2016.
- 5.33 The Petitioner has thereafter considered the actual capitalization and deletions based on the audited account for FY 2014-15 as depicted in the table below:

**Table 26 Additional Capitalization (Rs Cr) submitted by the Petitioner for both units**

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Opening GFA	1650.65	1676.22	1663.59	1690.25
Additions	25.57	7.28	26.66	7.22
Deletions	-	-	-	-
<b>Closing GFA</b>	<b>1676.22</b>	<b>1683.50</b>	<b>1690.25</b>	<b>1697.47</b>

- 5.34 Regulation 7.5 of the JSERC Generation Regulations, 2010 provides for admittance of additional capital expenditure incurred after the date of commercial operation of the project and up to the cut-off date. The COD of Phase-I of APNRL power plant was declared on May 19, 2013. Accordingly the cut-off date of the power project for the purpose of approval of additional capitalization would be March 31st, 2016.
- 5.35 Therefore, the Petitioner has submitted the net additional capitalization of Rs 52.22 Cr and Rs. 14.50 Cr incurred in FY 2014-15 and FY 2015-16, on account of deferred payments made to suppliers/ contractors towards the works completed forming part of the original scope of the project. The petitioner has considered the funding of additional capitalization as per the audited accounts of the Petitioner for FY 2014-15 and FY 2015-16.

#### *Commission's Analysis*

- 5.36 As per Clause 7.5 and 7.6 of the Generation Tariff Regulation, 2010:

#### *"Additional Capitalisation*

*7.5 The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

- (i) *Undischarged liabilities;*
- (ii) *Works deferred for execution;*
- (iii) *Procurement of initial capital spares within the original scope of work, subject to the provisions under clause 7.3,7.4 of these Regulations;*
- (iv) *Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and*
- (v) *Change in law.*

*Provided that the details of works included in the original scope of work along with estimates of expenditure, undischarged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.*

*‘7.6 The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:*

- (i) *Liabilities to meet award of arbitration or for compliance of the order or decree of a court;*
- (ii) *Change in law;*
- (iii) *Deferred works relating to ash pond or ash handling system in the original scope of work;*
- (iv) *Any additional works/services which have become necessary for efficient and successful operation of the generating station, but not included in the original project cost;”*

5.37 As per the definition of the cut-off date defined under the Generation Tariff Regulations, 2010,

*“Cut-off Date” means 31st March of the year closing after two years of the year of commercial operation of the project, and in case the project is declared under commercial operation in the last quarter of a year, the cut-off date shall be 31st March of the year closing after three years of the year of commercial operation;*

5.38 As per the aforementioned provisions of the Generation Tariff Regulations, 2010, the Commission asked for detailed justification and adequate documentary evidence from the Petitioner in regards to break up of total additional capitalization, original scope of work and amount capitalised towards each asset for the years FY 2014-15 and FY 2015-16 for both the units separately.

- 5.39 The Petitioner in its replies to discrepancy submitted the required break up as well as the auditor's certificate as documentary evidence supporting the additional capitalisation. Also, the Commission has verified the same amount being converted from CWIP to fixed assets from the audited accounts of FY 2014-15 and FY 2015-16.
- 5.40 Thus, the Commission after reviewing all the submissions of the Petitioner and adhering to the above mentioned clauses approves the additional capitalization of Rs.52.22 Cr and Rs.14.50 Cr incurred in FY 2014-15 and FY 2015-16, on account of deferred payments made to suppliers/contractors towards the works completed forming part of the original scope of the project.

## Depreciation

### *Petitioner's submission*

- 5.41 The Petitioner submitted that the depreciation for Unit 1 and Unit 2 been computed on the basis of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 and the depreciation rate has been considered same as notified in the Appendix – I of the regulations.
- 5.42 The depreciation submitted by the Petitioner is given in the table below:

**Table 27 Depreciation (Rs Cr) submitted by the Petitioner for both units**

Particulars	FY 2014-15	FY 2015-16
Unit 1	80.05	80.87
Unit 2	80.82	81.68

### *Commission's Analysis*

- 5.43 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Depreciation are given below:

*“7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission;*

*Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant.*

*7.29 The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.*

*7.31 Depreciation shall be calculated annually based on ‘Straight Line Method’ and at rates specified in Appendix-I to these Regulations for the assets of the generating station.”*

7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis.”

5.44 Accordingly, the Commission calculated the depreciation for Unit 1 and Unit 2 by considering the approved final capital cost for the respective units, as per the Order dated 09 January, 2018, and the depreciation rates specified in Appendix-I of Generation Tariff Regulations, 2010.

5.45 The following table shows the depreciation for Unit 1 and Unit 2 as calculated by the Commission as against that submitted by the Petitioner:

**Table 28 Depreciation approved by the Commission for Unit 1 (in Rs Cr)**

Asset Type	Approved in APR Order	Submitted now by APNRL FY 2014-15	Approved in True Up By JSERC	Approved in APR Order	Submitted now by APNRL FY 2015-16	Approved in True Up By JSERC
	Land owned under full title	-	-	-	-	-
Land held under lease	0.37	0.36	0.37	0.37	0.36	0.38
Plant and machinery	71.81	70.22	73.53	71.81	71.04	74.46
Building & civil works	7.01	9.47	7.13	7.01	9.47	7.23
Other Assets	0.4		0.39	0.4		0.37
<b>Total</b>	<b>79.59</b>	<b>80.05</b>	<b>81.43</b>	<b>79.59</b>	<b>80.87</b>	<b>82.43</b>

**Table 29 Depreciation approved by the Commission for Unit 2 (Rs Cr)**

Asset Type	Approved in APR Order	Submitted now by APNRL FY 2014-15	Approved in True Up By JSERC	Approved in APR Order	Submitted now by APNRL FY 2015-16	Approved in True Up By JSERC
	Land owned under full title	-	-	0.00	-	-
Land held under lease	0.37	0.36	0.37	0.37	0.36	0.38
Plant and machinery	72.92	71.09	74.32	72.92	71.94	75.28
Building & civil works	6.97	9.38	7.09	6.97	9.38	7.18
Other Assets	0.40		0.38	0.4		0.37
<b>Total</b>	<b>80.66</b>	<b>80.83</b>	<b>82.16</b>	<b>80.66</b>	<b>81.68</b>	<b>83.20</b>

## Debt Equity Ratio

### *Petitioner's submission*

- 5.46 The Petitioner submitted that that out of the total capital expenditure incurred amounting to Rs. 3,314.24 Crore as on April 1, 2014, 74.07% of the project cost has been funded from debt and remaining 25.93% is the equity contribution, which is in accordance with actual Debt: Equity ratio as per the audited account of the Petitioner for FY 2014-15.
- 5.47 Further, the funding of additional capital expenditure claimed during FY 2014-15, has been considered in the actual Debt: Equity ratio as per the audited accounts. Accordingly the blended Debt: Equity ratio for the capital cost up to 31 March, 2015 works out to be 73.12:26.88 which is also within the threshold limits prescribed by Regulation 7.5 of the JSERC Generation Regulations, 2010. The following table shows the unit wise debt equity ratio submitted by the Petitioner.

**Table 30 Debt Equity submitted by the Petitioner for Unit 1 & Unit 2**

Particulars	%	Amount (Rs Cr)
Debt	73.12%	2461.66
Equity	26.88%	904.81
<b>Total</b>	<b>100.00%</b>	<b>3366.47</b>

### *Commission's Analysis*

- 5.48 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Debt Equity Ratio are quoted below:

*“7.14 For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*

*Provided that where equity deployed is less than 30% of capital cost, the actual equity shall be considered for determination of tariff:*

*Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment”*

*Explanation:-*

*Any expenditure incurred or projected to be incurred on or after 1.04.2011 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause 7.14 of this Regulation.”*

5.49 The Commission has verified the actual equity contribution in the year at which the CoD was achieved. The equity contribution as per the audited accounts has been taken as the equity funding towards the capital cost of the project. The Commission observed an equity contribution of Rs 45.46 Cr in FY 2014-15. Thus, considering the approved gross fixed asset of Rs 3,366.46 Cr, at the end of FY 2014-15 and Rs 3,380.96 Cr at the end of FY 2015-16, the equity contribution works out to 26.88% in FY 2014-15 and 26.75% in FY 2015-16. The balance amount of the approved capital cost has been considered to be funded through debt.

5.50 Accordingly, the Commission approves the debt equity ratio as shown in the table below for both units:

**Table 31 Debt Equity ratio approved by the Commission for FY 2014-15**

Particulars	Submitted by APNRL		Approved True Up By JSERC	
	%	Amount (Rs Cr)	%	Amount (Rs Cr)
Debt	73.12%	2461.66	73.12%	2461.66
Equity	26.88%	904.81	26.88%	904.81
<b>Total</b>	<b>100%</b>	<b>3366.47</b>	<b>100%</b>	<b>3366.47</b>

**Table 32 Debt Equity ratio approved by the Commission for FY 2015-16**

Particulars	Submitted by APNRL		Approved by JSERC	
	%	Amount (Rs Cr)	%	Amount (Rs Cr)
Debt	73.24%	2476.16	73.24%	2476.16
Equity	26.76%	904.81	26.76%	904.81
<b>Total</b>	<b>100%</b>	<b>3380.97</b>	<b>100%</b>	<b>3380.97</b>

## Interest on Debt

### *Petitioner's submission*

5.51 The Petitioner submitted that the interest on debt has been claimed as per relevant clause of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2010.

5.52 The Petitioner submitted that the opening loan balance as on 01.04.2014 has been worked out considering the Debt: Equity ratio of 74.07:25.93 and reducing it by the cumulative repayments up to FY 2013-14. Thereafter the actual loan addition during the year has been considered during the year, considering the actual Debt: Equity ratio as per the audited accounts.

- 5.53 The interest rates as submitted by the Petitioner for the computation of the interest on debt are based on the actual interest rates payable i.e. 13.62% and 12.81% for Unit 1 in FY 2014-15 and FY 2015-16 and 13.63% and 13.65% for Unit 2 in FY 2014-15 and FY 2015-16 respectively. The following tables shows the interest on debt submitted by the Petitioner:

**Table 33 Interest on debt for FY 2014-15 and FY 2015-16 as submitted by the Petitioner**

Particulars	FY 2014-15	FY 2015-16
Unit 1	148.39	129.94
Unit 2	153.16	143.03

*Commission's Analysis*

- 5.54 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of interest on debt are as under:

*“7.19 The loans arrived at in the manner indicated in clause 7.13, 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.*

*7.20 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.*

*7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.*

*7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:*

*Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:*

*Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered*

*7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.*

- 5.55 The Commission has calculated the debt for each year based on the approved capital cost and considering the approved depreciation as repayment in line with the methodology specified in Generation Tariff Regulations, 2010.

- 5.56 The interest on debt approved by the Commission is shown in the tables below for both Units:



**Table 34 Interest on Debt (Rs Cr) approved by the Commission for Unit 1**

Particulars	Approved in APR	Submitted by the Petitioner	Approved by JSERC	Approved in ARR Order	Submitted by the Petitioner	Approved by JSERC
	FY 2014-15			FY 2015-16		
Opening Balance	1104.45	1128.02	1120.97	1024.64	1051.28	1042.85
Additions	0.00	3.31	3.31	0.00	7.28	7.28
Repayment	79.59	80.05	81.43	79.59	80.87	82.43
Closing Balance	1024.86	1051.28	<b>1042.85</b>	945.06	977.69	<b>967.70</b>
Interest on Debt%	13.43%	13.62%	13.62%	13.43%	12.81%	13.13%
Amount in Rs Cr	<b>142.98</b>	<b>148.39</b>	<b>147.36</b>	<b>132.27</b>	<b>129.94</b>	<b>131.99</b>

**Table 35 Interest on Debt (Rs Cr) approved by the Commission for Unit 2**

Particulars	Approved in APR	Submitted by the Petitioner	Approved by JSERC	Approved in MYT Order	Submitted by the Petitioner	Approved by JSERC
	FY 2014-15			FY 2015-16		
Opening Balance	1143.81	1162.41	1156.03	1062.94	1085.03	1077.05
Additions	0.00	3.45	3.45	0.00	7.22	7.22
Repayment	80.66	80.82	82.43	80.66	81.67	83.20
Closing Balance	1063.15	1085.04	<b>1077.05</b>	982.28	1010.58	<b>1001.07</b>
Interest on Debt%	13.33%	13.63%	13.63%	13.33%	13.65%	13.28%
Amount in Rs Cr	<b>147.09</b>	<b>153.16</b>	<b>152.18</b>	<b>136.31</b>	<b>143.03</b>	<b>137.99</b>

## Return on Equity

### *Petitioner's submission*

- 5.57 The Petitioner has submitted that the return on equity has been claimed as per the relevant clauses (7.15, 7.16, 7.17 & 7.18) of JSERC Generation Tariff Regulations, 2010.
- 5.58 The Petitioner submitted that it has calculated return on equity considering a post-tax return of 15.50% as per Generation Tariff Regulations, 2010.
- 5.59 The opening equity balance as on 01.04.2014 has been worked out considering the Debt: Equity ratio of 74.07:25.93. Thereafter, the actual equity addition during the year has been considered based on the audited accounts of the Petitioner.
- 5.60 The Return on equity for both units submitted by the Petitioner is shown in the following table:

**Table 36 Return on Equity (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner**

Particulars	FY 2014-15	FY 2015-16
Unit 1	68.06	69.79
Unit 2	68.66	70.46

*Commission's Analysis*

5.61 The provisions specified in the Generation Tariff Regulations, 2010 for approval of return on equity are as under:

*“7.15 Return on equity shall be computed in rupee terms, on the equity base determined*

*in accordance with clause 7.13, 7.14 of these Regulations. Petition for Approval of Capital Cost and Business Plan and MYT Petition for MYT Control Period for FY 2012-13 to FY 2015-16*

*7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations.*

.....

*Provided that in case of Projects commissioned on or after 1st April, 2011, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:*

*Provided further that the additional return of 0.5% shall not be admissible if the Project is not completed within the timeline specified above for reasons whatsoever:*

*7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate applicable to the Generating Company as per details shown as under:*

*(i).....*

*(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12*

*Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.*

*7.18 Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:*

*Rate of pre-tax return on equity = Base rate / (1-t)*

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations.”

- 5.62 The Commission has worked out the gross normative equity of both Unit 1 and Unit 2 as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2010. The Commission has considered the return on equity at 15.50%.
- 5.63 On scrutiny of the audited accounts of the petitioner, it has been observed that the petitioner has not paid any tax for the years FY 2014-15 and FY 2015-16. As such, Return on equity cannot be allowed to be grossed up with tax rate.
- 5.64 Accordingly, the return on equity approved by the Commission is shown in the tables below:

**Table 37 Return on Equity approved by the Commission for Unit 1 (in Rs Cr)**

Particulars	Approved in APR	Submitted by the Petitioner FY 2014-15	Approved by JSERC	Approved in ARR	Submitted by the Petitioner FY 2015-16	Approved by JSERC
<b>Equity</b>						
Opening Balance	426.89	428.00	433.37	426.89	450.25	455.63
Net Additions	0.00	22.26	22.26	0.00	0.00	0.00
Closing Balance	426.89	450.26	455.63	426.89	450.25	455.63
<b>Average Equity</b>	<b>426.89</b>	<b>439.13</b>	<b>444.50</b>	<b>426.89</b>	<b>450.25</b>	<b>455.63</b>
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (%)	20.96%	0.00%	0.00%	20.96%	0.00%	0.00%
Grossed Up rate of return on equity	19.61%	15.50%	15.50%	19.61%	15.50%	15.50%
<b>Return on equity</b>	<b>83.72</b>	<b>68.06</b>	<b>68.90</b>	<b>83.72</b>	<b>69.79</b>	<b>70.62</b>

**Table 38 Return on Equity approved by the Commission for Unit 2 (in Rs Cr)**

Particulars	Approved in APR	Submitted by the Petitioner FY 2014-15	Approved by JSERC	Approved in ARR	Submitted by the Petitioner FY 2015-16	Approved by JSERC
<b>Equity</b>						
Opening Balance	432.08	431.35	436.77	432.08	454.56	459.98
Net Additions	0.00	23.20	23.21	0.00	0.00	0.00
Closing Balance	432.08	454.55	459.98	432.08	454.56	459.98
<b>Average Equity</b>	<b>432.08</b>	<b>442.95</b>	<b>448.38</b>	<b>432.08</b>	<b>454.56</b>	<b>459.98</b>
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t %)	20.96%	0.00%	0.00%	20.96%	0.00%	0.00%

Particulars	Approved in APR	Submitted by the Petitioner FY 2014-15	Approved by JSERC	Approved in ARR	Submitted by the Petitioner FY 2015-16	Approved by JSERC
Grossed Up rate of return on equity	19.61%	15.50%	15.50%	19.61%	15.50%	15.50%
Return on equity	<b>84.73</b>	<b>68.66</b>	<b>69.50</b>	<b>84.73</b>	<b>70.46</b>	<b>71.30</b>

## O&M expenses & additional cost towards transportation of Fly Ash

### *Petitioner's submission*

5.65 The Petitioner submitted that since regulation 6.14(a) of JSERC Generation Regulations, 2010 provides that any surplus and deficit on account of O&M expenses shall be to the account of the generating company and shall not be trued up in ARR, the Petitioner in the instant petition has not claimed any Truing-up on account of O&M expenses for FY 2014-15 and FY 2015-16.

5.66 However, the Petitioner has claimed cost incurred towards transportation of fly ash of Rs. 1.70 Cr. The Petitioner has submitted that the Fly Ash Management Rules have been recently amended vide notification dated January 25th, 2016 under the existing MoEF notification dated 03rd November, 2009. The said amendment is in regard with the sharing of Cost of Transportation of Fly Ash between the beneficiary and the Coal based thermal power plant. The relevant extract of the notification is reproduced below:

*"MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE NOTIFICATION, New Delhi, the 25th January, 2016*

*2. In the said notification, in paragraph 2:-*

*"(10) The cost of transportation of ash for road construction projects or for manufacturing of ash based products or use as soil conditioner in agriculture activity within a radius of hundred kilometres from a coal or lignite based thermal power plant shall be borne by such coal or lignite based thermal power plant and the cost of transportation beyond the radius of hundred kilometres and up to three hundred kilometres shall be shared equally between the user and the coal or lignite based thermal power plant."*

5.67 The Petitioner has claimed the cost of transportation fly ash under "Change in Law" as defined in Regulation 2.1(3) of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 as per which:

*"Change in Law" means occurrence of any of the following events:*

- (i) the enactment, bringing into effect, adoption, promulgation, amendment, modification or repeal of any law; or*

- (ii) *change in interpretation of any law by a competent court, Tribunal or Indian Governmental Instrumentality which is the final authority under law for such interpretation; or*
- (iii) *change by any competent statutory authority, in any consent, approval or licence available or obtained for the project.*

*Commission's Analysis*

5.68 The Commission is not truing up any O&M expenses as per regulation 6.14(a) of JSERC Generation Regulations, 2010. Hence, the O&M expenses will be considered same as approved in APR of FY 2014-15 and ARR of FY 2015-16 as per the last Tariff Order.

5.69 With respect to the additional cost towards transportation of fly ash, the Commission had directed the Petitioner to submit duly audited details of the cost incurred including amount of ash transported, details of dumping locations/ road construction projects/ others, cost of transportation and distance from plant. The Petitioner was also directed to justify reasonability of the transportation cost which may include the process adopted to select the transporter, comparison of cost with Government approved rates etc.

5.70 In reply, the Petitioner submitted distance, quantum and total cost in support of its claims. However, the Petitioner failed to justify the reasonability of the cost. The Petitioner even failed to explain the process adopted to select the transporter. The Commission had also asked whether the revenue from sale/ disposal of such fly ash has been accounted for, which the Petitioner failed to justify. Further, on close scrutiny of the submission of the Petitioner regarding the distance, quantum and total cost, the Commission observed that for transporting of ash to a particular location, the Petitioner has claimed varying transportation rate (Rs/ MT). For instance, for dumping location 'Pendrabeda' located at a distance of 5 to 10 KM, the Petitioner in one of instance has claimed a cost of Rs 95/MT while on another instance has claimed a cost of Rs 112/MT. Moreover, the Commission also observes that with increase in distances of disposal of ash, the transportation cost per unit (Rs/km) has increased whereas over longer distance, the transportation cost per unit ought to decrease as compared to transportation over shorter distances. In view of the above discrepancies, the Commission does not approve any additional cost towards transportation of fly ash.

5.71 The O&M expenses approved by Commission for Unit 1 and Unit 2 are as follows:

**Table 39 O&M expenses (Rs Cr) of Unit 1 and Unit 2 approved by the Commission**

Particulars	FY 2014-15	FY 2015-16
Unit 1	64.91	68.63
Unit 2	64.91	68.63

### **Additional Water Charges**

#### *Petitioner's submission*

- 5.72 The Petitioner stated that CERC (Terms and Conditions of Tariff) Regulations, 2014 stipulates that water charges for thermal generating stations shall be allowed separately over and above the O&M expenses. The Petitioner stated that it incurred additional water charges to the extent of Rs 3.56 Cr and Rs 3.42 Cr in FY 2014-15 and FY 2015-16 for both Unit 1 and Unit 2.
- 5.73 The Petitioner submitted that an agreement was signed between Adhunik and Govt of Jharkhand for supply of water vide agreement dated 29th Aug'08. The required water was to be withdrawn or pumped by the company from the river Subarnarekha.
- 5.74 The Petitioner further submitted that the Water Department of Gov. of Jharkhand vide its Notification No: 2/PMC/jalapurti175/2007 dated 01.04.2011 devised various categories for water offtake and the Petitioner was asked to pay @ Rs 26.40 per thousand gallon. The same was opposed by the Petitioner and a stay order was issued by Hon'ble High Court of Jharkhand. The Petitioner submitted that it is paying the water charges at the pre-revised rate of Rs 4.50 per thousand gallons and accordingly they have claimed water charges.

**Table 40 Additional Water Charges (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner**

Particulars	FY 2014-15	FY 2015-16
Unit 1 & Unit 2	3.56	3.42

#### *Commission's Analysis*

- 5.75 The Commission has approved the O&M charges as per the provisions of the applicable JSERC Generation Tariff Regulations, 2010. The norms determined in these regulations are inclusive of water charges and as thus allowance of additional water charges is not in line with the provisions of the JSERC Generation Tariff Regulations, 2010.

### **Interest on Working Capital**

#### *Petitioner's submission*

- 5.76 The Petitioner while computing the working capital and Interest thereon as per the Generation Tariff Regulations, 2010 has considered the working capital as the sum of the following:
- Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
  - Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
  - Maintenance spares @ 20% of operation and maintenance expenses;*
  - Operation and Maintenance expenses for 1 month; and*

f) *Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.*

5.77 The Petitioner has considered the operation and maintenance expenses including water charges for the computation of interest on working capital.

5.78 The rate of interest has been considered at 14.75% for Unit 1 and 14.45% for Unit 2. Accordingly, the interest on working capital submitted by the Petitioner is shown in the table below:

**Table 41 Interest on Working Capital (Rs Cr) submitted by the Petitioner for Unit 1 and Unit 2**

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Coal Cost for 2 months	43.27	61.22	34.42	45.47
Cost of secondary fuel oil for 2 months	1.32	1.30	1.04	0.97
Receivables for 2 months	109.37	5.86	100.75	5.86
O&M Expenses for 1 month	5.56	126.13	5.56	111.64
Maintenance Spares	13.34	14.07	13.34	14.07
<b>Total Working Capital</b>	<b>172.86</b>	<b>208.58</b>	<b>155.10</b>	<b>178.01</b>
Rate of Interest	14.75%	14.75%	14.45%	14.45%
<b>Interest on Working Capital</b>	<b>25.50</b>	<b>30.77</b>	<b>22.41</b>	<b>25.72</b>

#### *Commission's Analysis*

5.79 The Commission has computed the interest on working capital for both Units 1 and 2 by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation of the Generation Tariff Regulation, 2010:

- a) *Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
- b) *Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
- c) *Maintenance spares @ 20% of operation and maintenance expenses;*
- d) *Operation and Maintenance expenses for 1 month; and*
- e) *Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.*

5.80 The Commission outlines the provisions laid out in the Generation Tariff Regulations, 2010 for approval of interest on working capital as under:

*“7.38 Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2011 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation, whichever is later during Transition period.*

*During Control Period rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2012 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation.*

*7.39 The interest on working capital shall be payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency or has exceeded the working capital loan based on the normative figures.”*

5.81 Accordingly, the Commission has calculated the Interest on Working Capital as per the rates prevailing on April 1, 2014 for FY 2014-15 and April 1, 2015 for FY 2015-16. The detailed calculation made by the Commission is shown in the tables below:

**Table 42 Interest on Working Capital (Rs Cr) approved by the Commission for FY 2014-15**

Particulars	Unit 1			Unit 2		
	Approved in APR	Submitted by APNRL	Approved by JSERC	Approved in ARR	Submitted by APNRL	Approved by JSERC
Coal Cost for 2 months	40.79	43.27	43.04	33.85	34.42	32.98
Cost of secondary fuel oil for 2 months	1.30	1.32	1.32	1.04	1.04	1.04
Receivables for 2 months	108.10	109.37	109.02	101.51	100.75	99.12
O&M Expenses for 1 month	5.41	5.56	5.41	5.41	5.56	5.41
Maintenance Spares	12.98	13.34	12.98	12.98	13.34	12.98
<b>Total Working Capital</b>	<b>168.58</b>	<b>172.86</b>	<b>171.77</b>	<b>154.80</b>	<b>155.10</b>	<b>151.53</b>
Rate of Interest	14.75%	14.75%	14.75%	14.75%	14.45%	14.45%
<b>Interest on Working Capital</b>	<b>24.87</b>	<b>25.50</b>	<b>25.34</b>	<b>22.83</b>	<b>22.41</b>	<b>21.90</b>

**Table 43 Interest on Working Capital (Rs Cr) approved by the Commission for FY 2015-16**

Particulars	Unit 1			Unit 2		
	Approved in APR	Submitted by APNRL	Approved by JSERC	Approved in ARR	Submitted by APNRL	Approved by JSERC
Coal Cost for 2 months	67.60	61.22	60.17	67.60	45.47	45.13
Cost of secondary fuel oil for 2 months	2.13	1.30	1.30	2.13	0.97	0.97
Receivables for 2 months	135.96	126.13	125.49	136.89	111.64	110.53
O&M Expenses for 1 month	5.72	5.86	5.72	5.72	5.86	5.72
Maintenance Spares	13.73	14.07	13.73	13.73	14.07	13.73
<b>Total Working Capital</b>	<b>225.14</b>	<b>208.58</b>	<b>206.40</b>	<b>226.07</b>	<b>178.01</b>	<b>176.08</b>



Particulars	Unit 1			Unit 2		
	Approved in APR	Submitted by APNRL	Approved by JSERC	Approved in ARR	Submitted by APNRL	Approved by JSERC
Rate of Interest	14.05%	14.75%	14.75%	14.05%	14.45%	14.45%
Interest on Working Capital	<b>31.63</b>	<b>30.77</b>	<b>30.44</b>	<b>31.76</b>	<b>25.72</b>	<b>25.44</b>

### Cost of Secondary Fuel Oil

#### *Petitioner's submission*

5.82 The Petitioner submitted that the secondary fuel would be procured through local suppliers. The cost of LDO is considered at Rs 64,285.62 /kL and at Rs 63,503.58 /kL for Unit 1 and Unit 2 respectively for FY 2014-15 and Rs. 46,243.36 /kL and at Rs. 46,472.79 /kL for Unit 1 and Unit 2 respectively for FY 2015-16.

5.83 The table below shows the cost of secondary fuel oil as submitted by the Petitioner for both Unit 1 and Unit 2 for FY 2014-15 and FY 2015-16:

**Table 44 Cost of secondary Fuel Oil submitted by the Petitioner for Unit 1 and Unit 2**

Particulars	Unit	FY 2014-15		FY 2015-16	
		Unit 1	Unit 2	Unit 1	Unit 2
Unit Capacity	MW	270	270	270	270
Normative Plant Availability	%	85.00%	85.00%	85.00%	85.00%
No. of Months of the Year	Months	12	12	12	12
Gross Generation	MU	1231.24	981.39	1680.29	1245.59
Normative Secondary Fuel Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00
Secondary Fuel Oil Consumption at Normative Plant Availability	kL	1231.24	981.39	1680.29	1245.59
Secondary Fuel Oil Landed Cost	Rs./kL	64285.62	63503.58	46243.36	46742.79
<b>Secondary Fuel Oil Cost at Normative Plant availability</b>	Rs. Cr.	<b>7.92</b>	<b>6.23</b>	<b>7.77</b>	<b>5.82</b>

#### *Commission's Analysis*

5.84 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of cost of secondary fuel oil are as under:

*“7.49 Expenses on secondary fuel oil in Rupees shall be computed corresponding to normative secondary fuel oil consumption (SFC) specified in clause 8.4, 8.6 of these Regulations, in accordance with the following formula:*

$$= SFC \times LPSFi \times NAPAF \times 24 \times NDY \times IC \times 10$$

*Where,*

*SFC – Normative Specific Fuel Oil consumption in ml/kWh*

*LPSFi – Weighted Average Landed Price of Secondary Fuel in Rs./ml considered initially*

*NAPAF – Normative Annual Plant Availability Factor in percentage*

*NDY – Number of days in a year*

*IC - Installed Capacity in MW”*

*7.50 Initially, the landed cost incurred by the Generating Company on secondary fuel oil shall be taken based on actuals of the weighted average price of the three preceding months and in the absence of landed costs for the three preceding months, latest procurement price for the generating station, before the start of the year.”*

- 5.85 The Petitioner has submitted the CA certificate towards month wise cost incurred towards secondary fuel oil. The Commission has considered the same for the purpose of approval of cost of secondary fuel oil for Unit 1 and Unit 2 for FY 2014-15 & FY 2015-16.

**Table 45 Cost of secondary fuel oil approved by the Commission for Unit 1**

Particulars	Approved in APR	Submitted by APNRL	Approved by JSERC	Approved in ARR	Submitted by APNRL	Approved by JSERC
	FY 2014-15 (Rs Cr)			FY 2015-16 (Rs Cr)		
Gross Generation at NAPAF (MU)	1227.07	1231.24	1231.24	2010.42	1680.29	1680.29
Specific Consumption of LDO at NAPAF (ml/kWh)	1.00	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPAF (kL)	1227.07	1231.24	1231.24	2010.42	1680.29	1680.29
LDO Landed Cost (Rs/kL)	63503.00	64285.62	64383.08	63503.00	46243.36	46248.29
LDO Cost (Rs Cr)	<b>7.79</b>	<b>7.92</b>	<b>7.93</b>	<b>12.77</b>	<b>7.77</b>	<b>7.77</b>

**Table 46 Cost of secondary fuel oil approved by the Commission for Unit 2**

Particulars	Approved in APR	Submitted by APNRL	Approved by JSERC	Approved in ARR	Submitted by APNRL	Approved by JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
Gross Generation at NAPAF (MU)	985.34	981.39	981.39	2010.42	1245.59	1245.59
Specific Consumption of LDO at NAPAF (ml/kWh)	1.00	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPAF (kL)	985.34	981.39	981.39	2010.42	1245.59	1245.59
LDO Landed Cost (Rs/kL)	63503.00	63503.58	63436.77	63503.00	46742.79	46744.85
LDO Cost (Rs Cr)	<b>6.26</b>	<b>6.23</b>	<b>6.23</b>	<b>12.77</b>	<b>5.82</b>	<b>5.82</b>

### Annual Fixed Charges

- 5.86 Regulation 8.2 of the Generation Tariff Regulations, 2010 states that the annual fixed charges of a thermal generating station shall consist of the following

- (a) Return on Equity;
- (b) Interest and Financing Charges on Loan Capital;
- (c) Depreciation;
- (d) Operation and Maintenance Expenses;
- (e) Interest Charges on Working Capital; and
- (f) Cost of Secondary Fuel Oil

5.87 The tables below show the annual fixed charges submitted by the Petitioner and approved by the Commission for each unit for the entire capacity of 270 MW.

**Table 47 Annual Fixed Charges of Unit 1 for 270 MW (Rs Cr)**

Particulars	Approved in APR	APNRL Submission FY 2014-15	Approved by JSERC	Approved in ARR	APNRL Submission FY 2015-16	Approved by JSERC
Depreciation	79.59	80.05	81.43	79.59	80.87	82.43
Interest on Loan	142.98	148.39	147.36	132.29	129.94	131.99
Return on Equity (pre -tax)	83.72	68.06	68.90	83.72	69.79	70.62
O&M Expenses (including water charges)	64.91	66.69	64.91	68.63	70.34	68.63
Interest on Working Capital	24.87	25.50	25.34	31.59	30.76	30.44
Cost of Secondary Fuel	7.79	7.92	7.93	12.77	7.77	7.77
<b>Annual Fixed Charges</b>	<b>403.85</b>	<b>396.60</b>	<b>395.85</b>	<b>408.59</b>	<b>389.47</b>	<b>391.89</b>

**Table 48 Annual Fixed Charges of Unit 2 for 270 MW (Rs Cr)**

Particulars	Approved in APR	APNRL Submission FY 2014-15	Approved by JSERC	Approved in ARR	APNRL Submission FY 2015-16	Approved by JSERC
Depreciation	80.66	80.82	82.16	80.66	81.67	83.20
Interest on Loan	147.09	153.16	152.18	136.34	143.03	137.99
Return on Equity (pre -tax)	84.73	68.66	68.77	84.73	70.46	71.30
O&M Expenses (including water charges)	64.91	66.69	64.91	68.63	70.34	68.63
Interest on Working Capital	22.84	22.41	21.90	31.74	25.72	25.44
Cost of Secondary Fuel	6.26	6.23	6.23	12.77	5.82	5.82
<b>Annual Fixed Charges</b>	<b>406.49</b>	<b>397.97</b>	<b>396.88</b>	<b>414.87</b>	<b>397.04</b>	<b>392.39</b>

### **Tariff for Unit 1 and Unit 2 and Impact of True Up** *Petitioner's Submission*

5.88 The Petitioner has submitted that the following charges as shown in the table may be approved towards the tariff for regulated capacity for JUVNL/JBVNL for Unit 1 & Unit 2 towards true up of FY 2014-15 and FY 2015-16:

**Table 49 Petitioner's Submission for tariff for 12% of total net capacity**

Description	Unit	FY 2014-15	FY 2015-16
Variable cost/ Base Energy Charge Rate (in Rs/ kWh)		Unit 1	
	Rs/kWh	2.317	2.151
		Unit 2	
	Rs/kWh	2.402	2.407

**Table 50 Supply of Regulated Capacity to Discom by Petitioner for FY 2014-15 and FY 2015-16**

Description	Derivation	Unit	Unit 1		Unit 2	
			FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Gross Capacity	A	MW	270	270	270	270
Auxiliary Consumption	B	%	9%	9%	9%	9%
Net Capacity	$C = A \times (1 - B)$	MW	245.7	245.7	245.7	245.7
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	MW	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	MW	216.22	216.22	216.22	216.22
<b>Total Annual Fixed Charge</b>	F	Rs Crore	<b>396.60</b>	<b>389.47</b>	<b>397.97</b>	<b>397.04</b>
Annual Fixed Charges/MW	$G = F/E$	Rs Crore/MW	1.83	1.80	1.84	1.84
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	MW	31.94	31.94	31.94	31.94
<b>AFC for 13% of Net Capacity</b>	$I = G \times H$	Rs Crore	<b>58.59</b>	<b>57.54</b>	<b>58.79</b>	<b>58.65</b>

*Commission's Analysis*

*Tariff for 12% of total net capacity*

5.89 The tariff for 12% of the total net capacity shall be the variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) approved by the Commission in this Order as given below:

**Table 51 Approved tariff for 12% of total net capacity**

Description	Unit	Unit 1	
		FY 2014-15	FY 2015-16
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.305	2.361
	Unit	Unit 2	
		FY 2014-15	FY 2015-16
	Rs/kWh	2.216	2.389

*Tariff for 13% of total net capacity*

5.90 The tariff for 13% of the total net capacity shall be the total tariff i.e. variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) and fixed charges as approved by the Commission in this Order as given below:

**Table 52 Approved tariff for 13% of total net capacity- variable cost**

Description	Unit	Unit 1	
		FY 2014-15	FY 2015-16
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.305	2.361
	Unit	Unit 2	
		FY 2014-15	FY 2015-16
	Rs/kWh	2.216	2.389

**Table 53 Approved tariff for 13% of total net capacity- fixed cost**

Description	Derivation	Unit	Unit 1		Unit 2	
			FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Gross Capacity	A	MW	270	270	270	270
Auxiliary Consumption	B	%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1 - B)$	MW	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	MW	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	MW	216.22	216.22	216.22	216.22
<b>Total Annual Fixed Charge</b>	F	Rs Crore	<b>395.85</b>	<b>391.89</b>	<b>396.88</b>	<b>392.39</b>
Annual Fixed Charges/MW	$G = F/E$	Rs Crore/ MW	1.83	1.81	1.84	1.81
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	MW	31.94	31.94	31.94	31.94
<b>AFC for 13% of Net Capacity</b>	$I = G \times H$	Rs Crore	<b>58.48</b>	<b>57.89</b>	<b>58.63</b>	<b>57.97</b>

## Impact of True Up

- 5.91 Commission has verified the bills, the Petitioner has issued to JUVNL/ JBVNL for FY 2014-15 and FY 2015-16 for supply of power from Unit 1 and Unit 2 of the petitioner. The revenue billed by the petitioner to JUVNL/JBVNL has been taken as total revenue earned by the petitioner.
- 5.92 The Commission has approved the impact of true up as shown in the following table considering the approved annual fixed charges, the per unit variable charges approved for the year and other factors.
- 5.93 **In accordance with Regulation 6.18 of JSERC ‘Generation Tariff Regulations, 2010’ the Petitioner shall recover/refund the gap/surplus in 6 equal monthly instalments from the beneficiary.**

**Table 54: Impact of True Up as Approved by Commission**

Particulars		Unit 1		Unit 2	
		FY 15	FY 16	FY 15	FY 16
Net Energy Supplied to JUVNL/JBVNL	MU	440.26	533.82	403.93	533.82
Rate of Energy Charge	Rs/kWh	2.31	2.36	2.22	2.39
AFC Entitlement on True Up	Rs Cr	58.48	57.89	58.63	57.97
Incentive/ Penalty	Rs Cr	-2.42	4.69	-2.42	4.70
Energy Charge Entitlement upon True up	Rs Cr	101.48	126.04	89.49	127.54
<b>Total Entitlement</b>	Rs Cr	<b>157.54</b>	<b>188.62</b>	<b>145.70</b>	<b>190.20</b>
<b>Revenue Billed</b>					
AFC	Rs Cr	60.22	64.48	56.07	62.10
EC (Inc. FPA/ Incentive)	Rs Cr	100.19	125.14	91.63	125.14
<b>Total Revenue Billed to JUVNL/ JBVNL</b>	Rs Cr	<b>160.41</b>	<b>189.63</b>	<b>147.70</b>	<b>187.25</b>
Gap/(Surplus)		(2.87)	(1.01)	(2.00)	2.95
Rate of Interest	%	14.75%	14.75%	14.75%	14.75%
From COD to 31st March of the respective FY	Days	365	366	365	366
Allowable Interest for the year	Rs Cr	(0.21)	(0.07)	(0.15)	0.22
Interest for the remaining period till January 31, 2018	Rs Cr	(1.16)	(0.26)	(0.81)	0.76
Total Interest (Simple Interest)	Rs Cr	(1.37)	(0.33)	(0.96)	0.97
<b>Total Amount to be additionally recovered / (paid back to JUVNL)</b>	Rs Cr	<b>(4.24)</b>	<b>(1.34)</b>	<b>(2.96)</b>	<b>3.92</b>

## **A6: BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21**

### *Petitioner's submission*

6.1 The Petitioner has classified the Business Plan broadly into the following categories:

- a) Capital Investment plan
- b) Capital Structure
- c) Operation and Maintenance (O&M) expenses
- d) Depreciation
- e) Performance Targets

### **Capital Investment Plan**

#### *Petitioner's submission*

6.2 The Petitioner has submitted that to improve plant's availability and enhance reliability in order to improve cost effectiveness of generation of electricity, it is essential to implement additional facilities. Thus, Petitioner has planned certain additional capitalization schemes as detailed below, which will get completed within the Control period.

6.3 The brief details of additional capitalisation submitted by the Petitioner are as follows:

- a) **Additional Water Reservoir:** In case of non-availability of water due to any breakdown in 8 KM stretch of water transporting system to meet full demand, another additional 30 days storage along with raw water pumping system to be developed to ensure utmost reliability for the power plant.
- b) **Gated Weir on Subarnarekha River:** Construction of gated weir which will ensure the availability of water for the power station even at any adverse condition/scarcity of water. It is known that the level of water in the area is going down day by day, thereby it is a threat for the reliable operation of the plant.
- c) **Critical Spares:** For continuous and trouble free operation, plant need to have adequate critical spares available for any break down/emergencies.
- d) **Brick Manufacturing Plant:** As per the environmental clearance received from the ministry of environment & forest, the Petitioner has to utilise 100% fly ash generated from the plant from 4<sup>th</sup> year of its operation. Hence, to comply with this requirement, the Petitioner has to set up a brick manufacturing plant.

- e) **Bottom Ash Handling System including Dewatering bin to feed HCSD System:**  
As per the environmental clearance received from the ministry of environment & forest, the Petitioner has to establish HCSD system to dispose the fly ash and bottom ash into the ash pond.
- f) **A private railway siding at the site** for which they have obtained necessary clearances for construction of railway siding and at Birajpur (plant end). Further, AAPL, one of the Adhunik group companies having plant very near to the APNRL site, is having their private railway siding which can be used for coal unloading.

**Table 55 Break-up of additional capitalisation & completion schedule by Petitioner**

Particulars	Hard Cost	Soft Cost	Total Cost	Year of Completion
Reservoir Construction including Land & Site Development	49.50	7.13	56.63	FY 20-21
Grated Weir Construction	39.32	5.66	44.98	FY 20-21
Critical Spares	30.59	4.41	35.00	FY 20-21
Brick Making Plant	4.00	0.58	4.58	FY 20-21
Bottom ash handling system including dewatering bin to feed HCSD system	26.54	3.82	30.36	FY 20-21
Railway Sliding	61.23	8.82	70.05	FY 20-21
<b>Total Cost</b>	<b>211.18</b>	<b>30.42</b>	<b>241.60</b>	FY 20-21

### *Commission's Analysis*

- 6.4 The Commission has outlined the provisions for approval of any additional capitalization, for a generating station in Clause 7.5 and 7.6 of the Generation Tariff Regulation, 2015. The clause is outlined below

#### *Additional Capitalization*

*'7.5 The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

- (vi) *Undischarged liabilities;*
- (vii) *Works deferred for execution;*
- (viii) *Procurement of initial capital spares within the original scope of work, subject to the provisions under clause 7.3,7.4 of these Regulations;*
- (ix) *Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and*
- (x) *Change in law.*



*Provided that the details of works included in the original scope of work along with estimates of expenditure, undischarged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.*

*‘7.6 The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:*

- (v) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;*
- (vi) Change in law;*
- (vii) Deferred works relating to ash pond or ash handling system in the original scope of work;*
- (viii) Any additional works/services which have become necessary for efficient and successful operation of the generating station, but not included in the original project cost;*
- (ix) Any liability for works executed prior to the cut-off date, after prudence check of the details of such undischarged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.*
- (x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialisation of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station”*

6.5 As per the definition of the cut-off date defined under the Generation Tariff Regulations, 2015,

*“Cut off Date” means 31st March of the year closing after two years of the year of commercial operation of the project, and in case the project is declared under commercial operation in the last quarter of a year, the cut-off date shall be 31st March of the year closing after three years of the year of commercial operation;*

6.6 The Commission has reviewed the current submissions of Petitioner regarding the proposed schemes for additional capitalisation. The Commission has also reviewed the Detailed Project Report (DPR) and cost benefit analysis submitted by the Petitioner.

6.7 With regard to the brick making plant proposed by the Petitioner, the Commission notes that the Central Electricity Regulatory Commission vide its Order dated 13.7.2012 in Petition No. 323/2009 has stated:

*“22.....We have examined the submissions of the parties and the provisions of the Notification dated 3.11.2009 of the Ministry of Environment & Forests, Government of India, applicable in the instant case. While the MOE&F notification dated 3.11.2009 encourages the need for increased use of fly ash for manufacture of bricks, the proviso to clause 8(i) and (ii) provides that the thermal power stations shall facilitate the availability of required quantity and quality of fly ash for this purpose. On scrutiny, it is noticed that the notification dated 3.11.2009, does not mandate the coal or lignite based thermal power stations to manufacture bricks. It is also observed that the said notification provides that all coal/lignite based thermal stations would be free to sell the fly ash to user agencies subject to certain conditions as mentioned therein. Moreover, the amount collected from sale of fly ash or fly ash based products by coal and/or lignite based thermal power stations or their subsidiary or sister concern unit, as applicable should be kept in a separate account head and shall be utilized only for development of infrastructure or facilities, promotion and facilitation activities for use of fly ash until 100% fly ash utilization level is achieved. Since the said notification provides that the money collected from the sale of fly ash or fly ash based products should be utilized for development of infrastructure for use of fly ash, the petitioner is not prevented from utilizing the money for procurement/ installation of brick making machines. Moreover, the income generated from sale of fly ash or fly ash based products like bricks are not passed on to the beneficiaries. Hence, we are of the view that it would not be prudent to load the said expenditure on brick making machine as additional capital expenditure, when such expenditure is neither covered under change in law nor the income from fly ash utilization is shared with the beneficiaries. Based on the above, the expenditure of `30.00 lakh towards brick making machine has not been allowed.”*

Accordingly, in view of the above, the Commission disallows the expenditure towards brick making plant.

- 6.8 In respect of other components of additional capitalisation, the Commission observes that the Petitioner has failed to bring out clearly, in his submissions, the need for the additional capitalisation and expected increase in useful life of the plant. For each scheme proposed by the Petitioner, detailed phasing of capital expenditure has not been clearly elucidated.
- 6.9 The Cost Benefit Analysis submitted by the Petitioner states benefits only in qualitative terms and is not accompanied by any analysis of the quantitative benefit to the Petitioner and its beneficiaries on account of the proposed schemes.
- 6.10 Further, the Petitioner, in the last Tariff Order, was directed to employ established methods of conducting cost benefit analysis (such as NPV, IRR and Payback Period) and quantitatively evaluate the need for a proposed investment as compared to other alternatives. The Petitioner has failed to do so.
- 6.11 In view of the above, the Commission does not find it prudent to approve any additional capitalisation at the moment. The Petitioner is directed to submit, along with the next tariff Petition or prior to taking up any capital expenditure, the detailed rationale for incurring such expenditure and taking into consideration the above mentioned observations of the Commission.

## Operation & Maintenance Expenses

### *Petitioner's submission*

- 6.12 The Petitioner has proposed the O&M expenses for the control period in line with the methodology provided in clause 7.41 of the JSERC Regulations, 2015.
- 6.13 Further the Petitioner has considered the O&M norms approved for FY 2015-16 as the base year O&M Expenses and has thereafter escalated the same by 6.30% year on year to determine the Operation & Maintenance Expenses for the control period FY 2017-18 to FY 2020-21.
- 6.14 The details of O&M expenses claimed by the Petitioner for the MYT control period 2016-17 to 2020-21 has been detailed in the table below:

**Table 56 O&M Expenses (Rs Cr) submitted by the Petitioner**

O&M Expenses	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 20-21
Norms for O&M Expenses as per JSERC Regulations (Rs Lakh/MW)	27.02	28.72	30.53	32.46	34.50
<b>Total O&amp;M Expenses</b>	<b>145.92</b>	<b>155.11</b>	<b>164.88</b>	<b>175.27</b>	<b>186.31</b>

### *Commission's Analysis*

- 6.15 The provisions laid out in the Generation Tariff Regulations, 2015 for approval of O&M expenses are as under:

*“7.41 Existing Thermal Generating Stations:*

*(a) The Applicant shall submit details of O&M expenses as required by the Commission. The O&M expenses excluding terminal liabilities for the Base Year shall be determined based on accounting statements for the base year, estimates of the Generating Company for relevant years and other factors considered relevant.*

*(b) The O&M expenses excluding terminal liabilities permissible towards determination of tariff for each year of the Control Period shall be determined after a prudence check by the Commission based on submissions of the Generating Company, previous years' actual expenses and any other factor considered relevant.*

*(c) Terminal Liabilities will be approved as per actual submitted by the Generating Company or be established through actuarial studies.*

*(d) Increase in O&M charges on account of war, insurgency or changes in laws, or like eventualities where the Commission is of the opinion that an increase in O&M charges is justified, may be considered by the Commission for a specified period.”*

- 6.16 Based upon the above regulation and considering the actual expenses incurred in last four years towards the Operation and Maintenance of plant, the Commission approves the O&M expenses through applying an escalation factor of 4.93% over the approved norm of FY 2015-16. The escalation factor has been arrived at by considering a composite index of WPI and CPI in the ratio of 80:20 over the last five year period.
- 6.17 As stated in Para 5.69, the Commission had directed the Petitioner to submit duly audited details of the cost incurred including amount of ash transported, details of dumping locations/ road construction projects/ others, cost of transportation and distance from plant. The Petitioner was also directed to justify reasonability of the transportation cost which may include the process adopted to select the transporter, comparison of cost with Government approved rates etc.
- 6.18 In reply, the Petitioner submitted distance, quantum and total cost in support of its claims. However, the Petitioner failed to justify the reasonability of the cost. The Petitioner even failed to explain the process adopted to select the transporter. The Commission had also asked whether the revenue from sale/ disposal of such fly ash has been accounted for, which the Petitioner failed to justify. Further, on close scrutiny of the submission of the Petitioner regarding the distance, quantum and total cost, the Commission observed that for transporting of ash to a particular location, the Petitioner has claimed varying transportation rate (Rs/ MT). For instance, for dumping location ‘Pendrabeda’ located at a distance of 5 to 10 KM, the Petitioner in one of instance has claimed a cost of Rs 95/MT while on another instance has claimed a cost of Rs 112/MT. Moreover, the Commission also observes that with increase in distances of disposal of ash, the transportation cost per unit (Rs/km) has increased whereas over longer distance, the transportation cost per unit ought to decrease as compared to transportation over shorter distances. In view of the above discrepancies, the Commission does not approve any additional cost towards transportation of fly ash at the moment.
- 6.19 The Petitioner is directed to submit, along with the next tariff petition, the reasonability of cost which may include the process adopted to select the transporter, comparison of cost with Government approved rates etc. Revenue generated from fly ash sales must be maintained in a separate account as per the MoEF notification, the details and accounting of which the Petitioner should submit along with its claim for such costs. Further, Actual expenditure incurred as claimed should be duly certified by auditors and the same should be kept in possession so that it can be produced to the beneficiaries on demand.
- 6.20 The following is being approved by the Commission for Unit 1 and Unit 2 as shown in the table below.

**Table 57 O&M expenses approved by the Commission**

O&M Expenses	FY 2016-17		FY 2017-18		FY 2018-19		FY 2019-20		FY 20-21	
	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2
O&M Expenses as per JSERC (Rs Lakh/ MW)	26.67	26.67	27.99	27.99	29.36	29.36	30.81	30.81	32.33	32.33
Fly Ash Cost	0	0	0	0	0	0	0	0	0	0

O&M Expenses	FY 2016-17		FY 2017-18		FY 2018-19		FY 2019-20		FY 20-21	
	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2
Total O&M Expenses	72.01	72.01	75.56	75.56	79.28	79.28	83.19	83.19	87.28	87.28

## Depreciation

### *Petitioner's submission*

- 6.21 The following table shows the allowable depreciation claimed, calculated considering the capital cost as on 1st April 2016, additional capitalization during FY 2016-17 to FY 2020-21 and the depreciation rates specified in Appendix-I of Generation Tariff Regulations, 2015:

**Table 58 Depreciation (Rs Cr) submitted by the Petitioner for both units**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 20-21
Depreciation	162.93	162.93	162.93	162.93	169.31

### *Commission's Analysis*

- 6.22 The provisions laid out in the Generation Tariff Regulations, 2015 for approval of Depreciation are given below:

*“7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission;*

*Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant*

*7.29 The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.*

*7.31 Depreciation shall be calculated annually based on ‘Straight Line Method’ and at rates specified in Appendix-I to these Regulations for the assets of the generating station.”*

*7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis.*

- 6.23 Accordingly, the Commission calculated the depreciation for Unit 1 and Unit 2 by considering the approved capital cost, additional capitalisation and the depreciation rates specified in Appendix-I of Generation Tariff Regulations, 2015.

- 6.24 The following table shows the depreciation for Unit 1 and Unit 2 as calculated by the Commission as against that submitted by the Petitioner:

**Table 59 Depreciation approved by the Commission for Unit 1**

Asset Type	FY 2016-17		FY 2017-18		FY 2018-19		FY 2019-20		FY 20-21	
	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2
Land owned under full title	-	-	-	-	-	-	-	-	-	-
Land held under lease	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.39	0.39
Plant and machinery	74.38	75.20	74.38	75.20	74.38	75.20	74.38	75.20	77.05	77.87
Building & civil works	7.25	7.21	7.25	7.21	7.25	7.21	7.25	7.21	7.51	7.46
Any Other Assets	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.38
<b>Total Depreciation</b>	<b>82.37</b>	<b>83.15</b>	<b>82.37</b>	<b>83.15</b>	<b>82.37</b>	<b>83.15</b>	<b>82.37</b>	<b>83.15</b>	<b>85.32</b>	<b>86.11</b>

## Performance Targets

6.25 The performance targets are discussed in detail in the next section of this order.

## **A7: DETERMINATION OF ARR FOR THE MYT PERIOD FY 2016-17 TO 2020-21**

### **Operational Parameters**

#### **Availability**

##### *Petitioner's submission*

- 7.1 The Petitioner in the petition has submitted that the availability for both Unit 1 and Unit 2 will be maintained at 85%.

##### *Commission's Analysis*

- 7.2 Clause 8.6 of the Generation Tariff Regulations, 2015 prescribes the norm for approving the availability of a new generating station.

*"8.6 The norms of operation for generating stations other than existing stations shall be as under:*

*(a) Normative Annual Plant Availability Factor (NAPAF): All thermal generating stations, NAPAF shall be 85%."*

- 7.3 Accordingly, the Commission approves availability for Unit 1 and Unit 2 at Normative Annual Plant Availability Factor i.e. at 85%.

#### **Generation**

##### *Petitioner's submission*

- 7.4 The Petitioner submitted that it has signed PPA with JSEB for the 122.85 MW capacity (25% of 491.4 MW, i.e., Gross Capacity of 2 Units of 270 MW each, totaling to 540 MW less Normative Auxiliary Consumption). For generation planning, the Petitioner has considered the plant load factor equal to the normative availability of 85%.
- 7.5 The projected generation submitted by the Petitioner in its MYT petition is shown in the following table

**Table 60 Gross generation submitted by the Petitioner for Unit 1**

Particulars	Unit	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Unit 1 & Unit 2	MW	540	540	540	540	540
No. of Months of Operation	No.	12	12	12	12	12
Gross Generation	MU	4020.84	4020.84	4020.84	4020.84	4020.84

*Commission’s Analysis*

- 7.6 The Commission has considered a normative plant load factor of 85% for projecting the generation for the second control period.
- 7.7 The table below shows the projected generation approved by the Commission for both the units:

**Table 61 Gross Generation of both units approved by the Commission**

Generation (MU)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Unit 1	2010.42	2010.42	2010.42	2010.42	2010.42
Unit 2	2010.42	2010.42	2010.42	2010.42	2010.42

**Auxiliary Consumption, Station heat rate and Secondary Fuel Oil Consumption**

*Petitioner’s submission*

- 7.8 The Petitioner in the petition has submitted that the auxiliary consumption both for Unit 1 and Unit 2 at 8.5% and additional 0.5% for induced draft cooling tower.
- 7.9 The Petitioner in the petition has submitted that the Station Heat rate both for Unit 1 and Unit 2 at 2387 kCal/kWh.
- 7.10 The Petitioner in the petition has submitted Secondary Fuel Oil Consumption for both for Unit 1 and Unit 2 at 1 ml/kWh.

*Commission’s Analysis*

- 7.11 Clause 8.6 of the Generation Tariff Regulations, 2015 prescribes the norm for approving the operational parameters including auxiliary consumption, station heat rate and secondary fuel oil consumption of a generating station.

*“Auxiliary Energy Consumption*

*8.6 (c) Gross Station Heat Rate:*

*(i) Coal-based and lignite-fired Thermal Generating Stations = 1.065 X Design Heat Rate (kCal/kWh)*

*Where, the Design Heat Rate of a unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.*

*Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:*



<i>Pressure Rating (kg/cm<sup>2</sup>)</i>	<i>150</i>	<i>170</i>	<i>170</i>	<i>247</i>
<i>SHT/RHT (OC)</i>	<i>535/ 535</i>	<i>537/ 537</i>	<i>537/ 565</i>	<i>537/ 565</i>
<i>Type of BFP</i>	<i>Electrical Driven</i>	<i>Turbine driven</i>	<i>Turbine Driven</i>	<i>Turbine Driven</i>
<i>Max Turbine Cycle Heat rate (kCal/kWh)</i>	<i>1955</i>	<i>1950</i>	<i>1935</i>	<i>1850</i>
<i>Min. Boiler Efficiency</i>				
<i>Sub-Bituminous Indian Coal</i>	<i>0.86</i>	<i>0.86</i>	<i>0.86</i>	<i>0.86</i>
<i>Bituminous Imported Coal</i>	<i>0.89</i>	<i>0.89</i>	<i>0.89</i>	<i>0.89</i>
<i>Max Design Unit Heat rate (kCal/kWh)</i>				
<i>Sub-Bituminous Indian Coal</i>	<i>2273</i>	<i>2267</i>	<i>2250</i>	<i>2151</i>
<i>Bituminous Imported Coal</i>	<i>2197</i>	<i>2191</i>	<i>2174</i>	<i>2078</i>

*Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken;*

*Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;*

*Provided also that if one or more units were declared under commercial operation prior to 1.4.2011, the heat rate norms for those units as well as units declared under commercial operation on or after 1.4.2012 shall be lower of the heat rate norms arrived at by above methodology and the norms as per clause 8.4 of these Regulations;*

*Note: In respect of units where the boiler feed pumps are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP.*

...

**8.6(d) (i) Coal Based generating Stations**

<i>200 MW Series</i>	<i>With Natural Draft cooling Tower or without cooling towers</i>	<i>8.50%</i>
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<i>500 MW Series- Steam Driven Boiler Feed Pumps</i>	<i>With Natural Draft cooling Tower or without cooling towers</i>	<i>6%</i>
<i>500 MW Series- Electrically driven Boiler Feed Pumps</i>	<i>With Natural Draft cooling Tower or without cooling towers</i>	<i>8.50%</i>

*Provided further that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%:*

*(e) Secondary Fuel Oil Consumption for Coal based generating stations: 1.0 ml/kWh.”*

7.12 The Commission in the previous orders asked the Petitioner to corroborate the procurement of the induced draft of the cooling towers and the Petitioner submitted the purchase order of such procurement. After verifying the purchase order submitted by the Petitioner, the Commission had approved the auxiliary consumption at normative level of 8.5% and an additional 0.5% for the induced cooling tower. Accordingly, the Commission approves the auxiliary consumption at 9.00%.

7.13 The Commission has considered the station heat rate as per its methodology in its last tariff order for the Petitioner. The relevant extracts of the order is reproduced below:

*“As per regulation cited above, the Commission has determined the design heat rate considering the plant specifications mentioned in the performance guarantee provided by the manufacturer (M/s Bharat Heavy Electricals Ltd.) in “Annexure-B Performance Guarantee Schedule” of the services contract between the Petitioner and M/s Bharat Heavy Electricals Ltd. The manufacturer has guaranteed the Turbine Cycle Heat Rate (at 100% TMCR with zero percent make up) at 1943 kCal/kWh and boiler efficiency at 86.7% for both Unit 1 and Unit 2. The unit design heat rate has been arrived at 2241 kCal/kWh by using guaranteed turbine cycle heat rate and boiler efficiency. By multiplying the unit design heat rate with the factor specified in the said regulations i.e. 1.065, the Commission arrived at the heat rate of 2387 kCal/kWh and accordingly approves the same.”*

7.14 The Commission approves the Secondary Fuel Oil Consumption at 1 ml/kWh as specified in the Regulation cited above.

### **Coal Mix, Coal Cost, Transit loss and GCV**

#### *Petitioner’s submission*

7.15 The Petitioner has submitted that due to de-allocation of coal block by the Supreme Court, the petitioner has to be depended upon the coal available in the Spot Market (e-auction) and imports, to meet its coal requirement for the period FY 2016-17 to 2020-21.

7.16 Further, the Fuel Supply Agreements with Central Coalfields Limited for Unit-1 and Unit-2 would also not in force from July 16 onwards. Accordingly, the Petitioner has proposed the following ratio of coal procurement through various sources:

**Table 62 Coal Procurement Ratio of both units submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
MOU Coal	12%	0%	0%	0%	0%
Domestic Coal	73%	80%	80%	80%	80%
Imported	15%	20%	20%	20%	20%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

7.17 The details of projected GCV of coal from various sources as considered by the Petitioner are depicted in the table below:

**Table 63 GCV of coal (kCal/kg) of both units submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
MOU Coal	3,593	-	-	-	-
Domestic Coal	3,262	3,262	3,262	3,262	3,262
Imported	3,969	3,969	3,969	3,969	3,969
<b>Weighted Average GCV of Coal</b>	<b>3,408</b>	<b>3,403</b>	<b>3,403</b>	<b>3,403</b>	<b>3,403</b>

7.18 The details of projected landed cost of coal from various sources as considered by the Petitioner are depicted in the table below:

**Table 64 Landed Cost of coal (Rs./MT) for both the units as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
MOU Coal	3,007	-	-	-	-
Domestic Coal	3,033	3,184	3,343	3,511	3,686
Imported	3,883	4,078	4,281	4,496	4,720
<b>Weighted Average Coal Price</b>	<b>3,157</b>	<b>3,363</b>	<b>3,531</b>	<b>3,708</b>	<b>3,893</b>

7.19 The Petitioner has considered an escalation of 5% in the prices of coal during the control period. The Petitioner claimed that any variation on account of change in the Gross Calorific Value (GCV) & Price of Coal shall be adjusted on monthly basis.

#### *Commission's Analysis*

7.20 The Commission notes that due to de-allocation of coal block by the Supreme Court, the Petitioner has to depend upon the coal available in the Spot Market (e-auction) and imports, to meet its coal requirement for the period FY 2016-17 to 2020-21. Further, the Petitioner has not projected any availability from the linkage source from FY 2016-17 onwards due to expiry of the agreement with CCL.

7.21 However, the Petitioner, in one of the replies to the discrepancy notes also submitted that it has secured long term source of primary fuel in May 2017 under the 'SHAKTI' scheme introduced by Ministry of Coal. Taking cognisance of the above, the Commission has approved the coal mix for the MYT Period same as that proposed by the Petitioner for FY 2016-17. The Commission shall approve the actual mix at the time of True-up of respective years, subject to prudence check and on submission of adequate data by the Petitioner.

7.22 With regards to landed cost of coal, as per Generation Tariff Regulations, 2015, the landed price of coal includes the following:

*"8.21 The landed fuel cost of primary fuel and secondary fuel for tariff determination shall be based on actual weighted average cost of primary fuel and secondary fuel of the three preceding months, and in the absence of landed costs for the three preceding months, latest procurement price of primary fuel and secondary fuel for the generating station, before the start of the tariff period for existing stations and immediately preceding three months in case of new generating stations shall be taken into account.*

*The landed cost of fuel for the month shall include price of fuel corresponding to the grade and quality of fuel inclusive of royalty, taxes and duties as applicable, transportation cost by rail / road or any other means, and, for the purpose of computation of energy charge, and in case of coal/lignite shall be arrived at after considering normative transit and handling losses as percentage of the quantity of coal or lignite dispatched by the coal or lignite supply company during the month as given below:*

*Pithead generating stations: 0.2%*

*Non-pithead generating stations: 0.8%*

*Provided that in case of pit head stations if coal or lignite is procured from sources other than the pit head mines which is transported to the station through rail, transit loss of 0.8% shall be applicable:*

*Provided further that in case of imported coal, the transit and handling losses shall be 0.2%."*

7.23 Further, as per Clause 7.37 of Generation Tariff Regulations, 2015,

*"the cost of fuel in cases covered ... shall be based on the landed cost incurred (taking into account normative transit and handling losses) by the Generating Company and gross calorific value of the fuel as per actual for the three months preceding the first month for which tariff is to be determined and no fuel price escalation shall be provided during the tariff period."*

- 7.24 The GCV of coal is approved as per weighted average actual for the three months preceding the first month for which tariff is to be determined as mentioned in clause 7.37 of Generation Tariff Regulations, 2015.
- 7.25 The Commission approves normative transit loss of 0.8% for coal procured from domestic sources (other than coal obtained from captive coal block) and 0.2% for imported coal in accordance with the Generation Tariff Regulations, 2015.

**Table 65 Coal Cost (Rs/MT) inclusive of transit loss for Unit 1 and Unit 2 approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Domestic Coal-Linkage	2534	2534	2534	2534	2534
Domestic Coal-Spot Market	3308	3308	3308	3308	3308
Imported Coal	3860	3860	3860	3860	3860

**Table 66 GCV (Kcal/L) of coal for Unit 1 and Unit 2 approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Domestic Coal-Linkage	4050	4050	4050	4050	4050
Domestic Coal-Spot Market	3233	3233	3233	3233	3233
Imported Coal	3827	3827	3827	3827	3827

## Base Energy Charge Rate (ECR) and Cost of Primary Fuel

### *Petitioner's submission*

- 7.26 The Petitioner in the Petition has projected the energy charge for the control period FY 2016-17 to FY 2020-21 of both units as below:

**Table 67 Energy Charge Rate submitted by the Petitioner for Unit 1 and Unit 2**

Particulars	Uom	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Operational Parameters						
Normative Aux Consumption	%	9.00%	9.00%	9.00%	9.00%	9.00%
Heat Rate	kCal/ kWh	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil Coal	kCal/Kg	9347	9347	9347	9347	9347
Weighted Average Calorific Value of Indian Coal	kCal/kg	3408	3403	3403	3403	3403
Weighted Average cost of Indian Coal	Rs/Tonne	3157	3363	3531	3708	3893
<b>Energy Charge rate</b>	<b>Rs/kWh</b>	<b>2.462</b>	<b>2.625</b>	<b>2.756</b>	<b>2.894</b>	<b>3.038</b>

*Commission's Analysis*

7.27 As per the Generation Tariff Regulation, 2015, the energy (variable) charge shall cover primary fuel costs and shall be payable by every beneficiary for the total energy scheduled to be supplied to such Beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month.

7.28 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Regulation 8.18 and 8.19 of the Generation Tariff Regulation, 2015 as quoted below:

*"8.18 Total Energy charge payable to the Generating Company for a month shall be:*

$$= (\text{Energy charge rate in Rs. /kWh}) \times \{\text{Scheduled energy (ex-bus) for the month in kWh.}\}$$

*8.19 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:*

*(a) For coal based stations*

$$ECR = \{(GHR - SFC \times CVSF) \times LPPF/CVPF + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)\}$$

*(b) For gas and liquid fuel based stations*

$$ECR = GHR \times LPPF \times 100 / \{CVPF \times (100 - AUX)\}$$

*Where,*

*AUX - Normative auxiliary energy consumption in percentage*

*CVPF – (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations*

*(b) Weighted Average Gross calorific value of primary fuel as received in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations.*

*(c) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio.*

*CVSF - Calorific value of secondary fuel, in kCal per ml*

*ECR - Energy charge rate, in Rupees per kWh sent out.*

*GHR - Gross station heat rate, in kCal per kWh.*

*LC = Normative limestone consumption in kg per kWh*

*LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed price of primary fuel shall be arrived in proportion to blending ratio)*

*LPSFi=Weighted Average Landed Price of Secondary Fuel in Rs./ml during the month*

*LPL = Weighted average landed price of limestone in Rupees per kg.*

*SFC - Specific fuel oil consumption, in ml per kWh*

*Provided that energy charge rate for a gas/liquid fuel based station shall be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee for the open cycle operation during the month.”*

7.29 Accordingly, the Commission has calculated the base ECR for the Control Period as per the formula stated above and after considering the operational parameters as approved in this order. The table below contain the base ECR approved by the Commission for the period FY 2016-17 to FY 2020-21:

**Table 68 Approved Energy Charge Rate for Unit 1**

Particulars	Uom	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Normative Aux Consumption	%	9%	9%	9%	9%	9%
Heat Rate	kCal/kWh	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	kCal/Kg	9336	9336	9336	9336	9336
Weighted average cost of Oil	Rs/KL	42637	42637	42637	42637	42637
Weighted Average Calorific Value of Coal	kCal/kg	3918	3918	3918	3918	3918
Weighted Average cost of Coal (Inc transit loss)	Rs/Tonne	2826	2826	2826	2826	2826
<b>Energy Charge rate</b>	<b>Rs/kWh</b>	<b>1.762</b>	<b>1.762</b>	<b>1.762</b>	<b>1.762</b>	<b>1.762</b>

**Table 69 Approved Energy Charge Rate for Unit 2**

Particulars	Uom	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Normative Aux Consumption	%	9%	9%	9%	9%	9%
Heat Rate	kCal/kWh	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	kCal/Kg	9336	9336	9336	9336	9336
Weighted average cost of Oil	Rs/KL	45134	45134	45134	45134	45134

Particulars	Uom	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Weighted Average Calorific Value of Coal	kCal/kg	3918	3918	3918	3918	3918
Weighted Average cost of Coal (Inc transit loss)	Rs/Tonne	2826	2826	2826	2826	2826
<b>Energy Charge rate</b>	<b>Rs/kWh</b>	<b>1.764</b>	<b>1.764</b>	<b>1.764</b>	<b>1.764</b>	<b>1.764</b>

7.30 The Energy Charge Rate (ECR) approved by the Commission as above shall be the base energy charge rate for the year. Any variation in fuel prices on account of change in the Gross Calorific Value (GCV) of coal shall be adjusted on a monthly basis on the basis of weighted average GCV of coal in stock, received and burnt, and weighted average landed cost incurred by the Petitioner for procurement of coal, utilizing the fuel price adjustment mechanism given in the Generation Tariff Regulations, 2015.

### Determinants of Fixed Charges

#### Additional Capitalization & Depreciation

7.31 The additional capitalization as well as depreciation have been discussed and approved in the previous section of this Order on approval of Business Plan.

#### Interest on Debt

##### *Petitioner's submission*

7.32 The Petitioner, in the petition has submitted that the opening loan balance as on 01.04.2016 has been considered equivalent to the closing balances claimed in the True-up Petition for FY 2015-16. Thereafter the normative loan addition during the year has been computed at 70% of the total additional capitalization proposed during the year, considering the normative debt: equity ratio of 70:30.

7.33 The Petitioner has considered the repayment during the year equivalent to the normative depreciation for the year being in line with the methodology prescribed in the JSERC Generation Regulations, 2015.

7.34 Further, the JSERC Generation Regulations, 2015 Regulations provides that weighted average interest rate shall be considered for the purpose of calculation of allowable interest on loan during the year.

7.35 Accordingly, the Petitioner has worked out the weighted average rate of interest at 13.65% on the basis of total loan portfolio of the petitioner for FY 2015-16.

7.36 The following tables represent the detailed computation of Interest on Debt for the control period FY 2016-17 to FY 2020-21:



**Table 70 Interest on Debt of both units as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Balance	1988.24	1825.31	1662.38	1499.45	1336.52
Addition during the year	0.00	0.00	0.00	0.00	169.12
Repayment (Equal to Depreciation allowed for the year)	162.93	162.93	162.93	162.93	169.31
Closing Balance	<b>1825.31</b>	<b>1662.38</b>	<b>1499.45</b>	<b>1336.52</b>	<b>1336.33</b>
Interest on Debt (%)	13.65%	13.65%	13.65%	13.65%	13.65%
Interest on Debt	<b>260.27</b>	<b>238.03</b>	<b>215.79</b>	<b>193.56</b>	<b>182.42</b>

*Commission's Analysis*

7.37 The provisions laid out in the Generation Tariff Regulations, 2015 for approval of Interest on Debt as quoted as under:

*“7.19 The loans arrived at in the manner indicated in clause 7.13, 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.*

...

*7.21 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.*

*7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.*

*7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:*

...

*7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.”*

7.38 The Commission has calculated the debt for each year based on the approved capital cost and considering the approved depreciation as repayment in line with the methodology specified in Generation Tariff Regulations, 2015.

7.39 The rates of interest from FY 2016-17 to FY 2020-21 have been taken equal to those approved for FY 2015-16. The interest on debt approved by the Commission is shown in the tables below for both Units:

**Table 71 Interest on Debt (Rs Cr) approved by the Commission for Unit 1**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Balance	967.70	885.33	802.96	720.60	638.23
Addition during the year	0.00	0.00	0.00	0.00	0.00
Repayment (Equal to Depreciation allowed for the year)	82.37	82.37	82.37	82.37	82.37
Closing Balance	885.33	802.96	720.60	638.23	555.86
Average Balance	926.51	844.15	761.78	679.41	597.04
Interest on Debt (%)	13.13%	13.13%	13.13%	13.13%	13.13%
<b>Interest on Debt</b>	<b>121.65</b>	<b>110.84</b>	<b>100.02</b>	<b>89.21</b>	<b>78.39</b>

**Table 72 Interest on Debt approved by the Commission for Unit 2**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Balance	1001.07	917.92	834.77	751.63	668.48
Addition during the year	0.00	0.00	0.00	0.00	0.00
Repayment (Equal to Depreciation allowed for the year)	83.15	83.15	83.15	83.15	83.15
Closing Balance	917.92	834.77	751.63	668.48	585.33
Average Balance	959.49	876.35	793.20	710.48	626.91
Interest on Debt (%)	13.28%	13.28%	13.28%	13.28%	13.28%
<b>Interest on Debt</b>	<b>127.42</b>	<b>116.38</b>	<b>105.34</b>	<b>94.30</b>	<b>83.25</b>

## Return on Equity

### *Petitioner's submission*

7.40 The Petitioner submitted that it has calculated return on equity considering a post-tax return of 15.50% as per Generation Tariff Regulations, 2015. The opening equity balance as on 01.04.2016 has been considered equivalent to the closing equity balance submitted by the Petitioner in the True-up petition for FY 2015-16.

- 7.41 The Petitioner submitted that since it is not liable to any tax on account of huge losses incurred on yearly basis, the rate of return on equity has been considered equivalent to the pre-tax rate i.e. 15.50%.
- 7.42 Thereafter, the normative equity addition during the year has been computed at 30% of the total proposed capitalization during the control period, considering the normative debt: equity ratio of 70: 30.
- 7.43 Accordingly, the Return on Equity (Pre-Tax) claimed for FY 2016-17 to FY 2020-21 are summarized in the table below:

**Table 73 Return on Equity (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
ROE (pre-tax)	140.25	140.25	140.25	140.25	145.86

*Commission's Analysis*

- 7.44 The he provisions laid out in the Generation Tariff Regulations, 2015 for approval of Return on Equity are as under:

*"7.15 Return on equity shall be computed in rupee terms, on the equity base determined in accordance with clause 7.13, 7.14 of these Regulations.*

*7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations.*

.....

*Provided that in case of Projects commissioned on or after 1st April, 2016, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:*

*Provided further that the additional return of 0.5% shall not be admissible if the Project is not completed within the timeline specified above for reasons whatsoever:*

*7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal applicable tax rate for the FY 2016-17 applicable to the Generating Company.*

(i).....

(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12 Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.

7.18 Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations."

7.45 The Commission has worked out the gross normative equity of both Unit 1 and Unit 2 as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2015. The Commission has considered the return on equity at 15.50%.

7.46 The return on equity approved by the Commission is shown in the tables below:

**Table 74 Return on Equity approved by the Commission for Unit 1**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Equity</b>					
Opening Balance	455.63	455.63	455.63	455.63	455.63
Net Additions	0.00	0.00	0.00	0.00	0.00
Closing Balance	455.63	455.63	455.63	455.63	455.63
Average Equity	455.63	455.63	455.63	455.63	455.63
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t%)	0.00%	0.00%	0.00%	0.00%	0.00%
Grossed Up rate of return on equity	15.50%	15.50%	15.50%	15.50%	15.50%
<b>Return on equity</b>	<b>70.62</b>	<b>70.62</b>	<b>70.62</b>	<b>70.62</b>	<b>70.62</b>

**Table 75 Return on Equity approved by the Commission for Unit 2**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Equity</b>					
Opening Balance	459.98	450.25	450.25	450.25	450.25
Net Additions	0.00	0.00	0.00	0.00	0.00
Closing Balance	450.25	450.25	450.25	450.25	450.25
Average Equity	450.25	450.25	450.25	450.25	450.25

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t%)	0.00%	0.00%	0.00%	0.00%	0.00%
Grossed Up rate of return on equity	15.50%	15.50%	15.50%	15.50%	15.50%
Return on equity	<b>69.79</b>	<b>69.79</b>	<b>69.79</b>	<b>69.79</b>	<b>69.79</b>

- 7.47 The Commission would like to highlight that the threshold norms for RoE approved in the regulation had been determined based on rates (interest rates on long term debt/ premium to be allowed for equity) prevalent prior to the notification of the Regulation in the year 2015. Over the past few year, there has been a decrease in the interest rates. In view of that, the Commission is of the opinion that determining tariffs using threshold rates as given in the Regulations is not in the interest of the public. The benefit of the decrease in rates should be passed on in the tariffs to be determined in the coming years. CERC vide its Terms and Conditions for Tariff determination from Renewable Energy Sources Regulations, 2017 has also lowered the normative Return on Equity to 14%, to be grossed up by prevailing MAT as on 1st April of previous year.
- 7.48 In view of the above, the Commission may re-look the RoE during the course of True-up in the subsequent years after review of the prevailing rates which may impact the ARR as well as the approved fixed and energy charges.

## O&M Expenses

- 7.49 The O&M expenses have been discussed and approved in the Business Plan section of this Order.

## Interest on Working Capital

### *Petitioner's submission*

- 7.50 The Petitioner while computing the working capital and Interest thereon as per the Generation Tariff Regulations, 2015 has considered the working capital as the sum of the following:
- (a) *Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;;*
  - (c) *Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;*
  - (d) *Maintenance spares @ 20% of operation and maintenance expenses specified in clauses 7.40- 7.48 of these Regulations;*

(d) Operation and Maintenance expenses for 1 month; and

(e) Receivables equivalent to 2 months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

7.51 The Petitioner in the petition has submitted that for calculation of Interest on Working Capital, the rate of interest on working capital equal to the bank rate specified by the State Bank as on 01.04.2016 plus 350 basis points. Accordingly the Petitioner has considered 13.50% as the Rate of Interest for calculation of allowable interest on Working Capital for the control period.

7.52 The Interest on working capital submitted by the Petitioner is shown in the table below:

**Table 76 Interest on Working Capital (Rs Cr) submitted by the Petitioner for Unit 1 and Unit 2**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Coal Cost for 2 months	147.70	157.55	165.43	173.70	182.39
Cost of secondary fuel oil for 2 months	2.45	2.55	2.65	2.76	2.87
Receivables for 2 months	12.30	13.07	13.89	14.75	15.53
O&M Expenses for 1 month	279.57	287.81	294.10	300.91	312.20
Maintenance Spares	29.53	31.37	33.32	35.40	37.26
<b>Total Working Capital</b>	<b>471.57</b>	<b>492.36</b>	<b>509.39</b>	<b>527.52</b>	<b>550.24</b>
Rate of Interest	13.50%	13.50%	13.50%	13.50%	13.50%
<b>Interest on Working Capital</b>	<b>63.66</b>	<b>66.47</b>	<b>68.77</b>	<b>71.22</b>	<b>74.28</b>

#### Commission's Analysis

7.53 The Commission has computed the interest on working capital for both Units 1 and 2 by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation 7.34 of the Generation Tariff Regulation, 2015.

(a) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(b) Cost of coal or lignite and limestone for 30 days for generation corresponding to normative annual plant availability factor;

(c) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;

(d) Maintenance spares @ 20% of Operation and maintenance expenses specified in clauses 7.40 to 7.48 of these regulations;

(e) Operation and Maintenance expenses for 1 month; and

(f) Receivables equivalent to 2 months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

7.54 The Commission outlines the provisions laid out in the Generation Tariff Regulations, 2015 for approval of Interest on Working Capital as under:

*“7.38 Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 01.04.2016 or as on 1st April of the year during the tariff period 2016-17 to 2020-21 in which the generating station or a unit thereof, is declared under commercial operation, whichever is later.*

*Provided that the rate of interest on working capital shall be trued up on the basis of actual bank rate as on 1st April of the respective year at the time of true up for that year.*

*7.39 The interest on working capital shall be payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency or has exceeded the working capital loan based on the normative figures.”*

7.55 Accordingly the Commission calculated the interest on working capital on the rates prevailing on the April 1, 2016 plus 350 basis point i.e. at 12.80% for Unit 1 and Unit 2. The detailed calculation made by the Commission is shown in the tables below:

**Table 77 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 1**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Coal cost 1 month or max coal stock whichever is lower	26.14	26.14	26.14	26.14	26.14
Coal Cost for 1 months	26.14	26.14	26.14	26.14	26.14
Cost of secondary fuel oil for 2 months	1.43	1.43	1.43	1.43	1.43
Receivables for 2 months	115.83	114.61	113.42	112.28	111.16
O&M Expenses for 1 month	6.00	6.30	6.61	6.93	7.27
Maintenance Spares	14.40	15.11	15.86	16.64	17.46
<b>Total Working Capital</b>	<b>189.94</b>	<b>189.72</b>	<b>189.59</b>	<b>189.56</b>	<b>189.60</b>
Rate of Interest	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>24.31</b>	<b>24.28</b>	<b>24.27</b>	<b>24.26</b>	<b>24.27</b>

**Table 78 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 2**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Coal cost 1 month or max coal stock whichever is lower	26.14	26.14	26.14	26.14	26.14

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Coal Cost for 1 months	26.14	26.14	26.14	26.14	26.14
Cost of secondary fuel oil for 2 months	1.51	1.51	1.51	1.51	1.51
Receivables for 2 months	116.88	115.64	114.41	113.22	112.06
O&M Expenses for 1 month	6.00	6.30	6.61	6.93	7.27
Maintenance Spares	14.40	15.11	15.86	16.64	17.46
<b>Total Working Capital</b>	<b>191.08</b>	<b>190.84</b>	<b>190.66</b>	<b>190.59</b>	<b>190.59</b>
Rate of Interest	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>24.46</b>	<b>24.43</b>	<b>24.40</b>	<b>24.39</b>	<b>24.40</b>

## Cost of Secondary Fuel Oil

### *Petitioner's submission*

7.56 The Petitioner has submitted that the secondary fuel would be procured through local suppliers. The Petitioner for the purpose of working out the expenditure on account of secondary fuel oil (LDO) has considered the weighted average GCV and Price of secondary fuel oil for the period April to September, 2016. Further the Petitioner has considered an escalation of 4% in the prices of secondary fuel oil during the control period.

7.57 Any variation on account of change in the Gross Calorific Value (GCV) and Prices of secondary fuel oil shall be adjusted on a monthly basis. Accordingly the Petitioner has worked out the allowable cost of secondary fuel oil for FY 2016-17 to FY 2020-21.

7.58 The table below shows the cost of secondary fuel oil as submitted by the Petitioner for both Unit 1 and Unit 2:

**Table 79 Cost of secondary Fuel Oil submitted by the Petitioner for Unit 1 and Unit 2**

Particulars	Unit	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Unit Capacity	MW	540.00	540.00	540.00	540.00	540.00
Gross Generation at Normative Plant Availability	MU	4020.84	4020.84	4020.84	4020.84	4020.84
Normative Secondary Fuel Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Secondary Fuel Oil Consumption at Normative Plant Availability	kL	4020.84	4181.67	4348.94	4522.90	4703.81
Secondary Fuel Oil Landed Cost	Rs./kL	36574	36574	36574	36574	36574
<b>Secondary Fuel Oil Cost at Normative Plant availability</b>	<b>Rs. Cr.</b>	<b>14.71</b>	<b>15.29</b>	<b>15.91</b>	<b>16.54</b>	<b>17.20</b>



*Commission's Analysis*

7.59 The Commission has considered the projection of cost of secondary fuel oil as per Generation Regulations 2015 for Unit 1 and Unit 2 as follows:

**Table 80 Cost of secondary fuel oil approved by the commission for Unit 1**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation at NAPAF (MU)	2010.42	2010.42	2010.42	2010.42	2010.42
Specific Consumption of LDO at NAPAF (ml/kWh)	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPAF (kL)	2010.42	2010.42	2010.42	2010.42	2010.42
LDO Landed Cost (Rs/kL)	42637	42637	42637	42637	42637
<b>LDO Cost (Rs Cr)</b>	<b>8.57</b>	<b>8.57</b>	<b>8.57</b>	<b>8.57</b>	<b>8.57</b>

**Table 81 Cost of secondary fuel oil approved by the commission for Unit 2**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation at NAPAF (MU)	2010.42	2010.42	2010.42	2010.42	2010.42
Specific Consumption of LDO at NAPAF (ml/kWh)	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPAF (kL)	2010.42	2010.42	2010.42	2010.42	2010.42
LDO Landed Cost (Rs/kL)	45134	45134	45134	45134	45134
<b>LDO Cost (Rs Cr)</b>	<b>9.07</b>	<b>9.07</b>	<b>9.07</b>	<b>9.07</b>	<b>9.07</b>

## Additional Water Charges

*Petitioner's submission*

7.60 The Petitioner submitted that an agreement was signed between Adhunik and Govt of Jharkhand for supply of water vide agreement dated 29th Aug'08. The required water was to be withdrawn or pumped by the company from the river Subarnarekha.

7.61 The Petitioner further submitted that the Water Department of Gov. of Jharkhand vide its Notification No: 2/PMC/jalapurti175/2007 dated 01.04.2011 devised various categories for water offtake and the Petitioner was asked to pay @ Rs 26.40 per thousand gallon. The same was opposed by the Petitioner and a stay order was issued by Hon'ble High Court of Jharkhand. The Petitioner submitted that it is paying the water charges at the pre-revised rate of Rs 4.50 per thousand gallons and accordingly they have claimed water charges.

7.62 The Petitioner in the petition stated that CERC (Terms and Conditions of Tariff) Regulations, 2015 stipulates that water charges for thermal generating stations shall be allowed separately. The relevant extracts of the regulation as submitted by the Petitioner is reproduced as below:

“29. *Operation and Maintenance Expenses:*

(1) *Normative Operation and Maintenance Expenses of Thermal Generating*

*Stations...*

(2) *The Water Charges and capital spares for thermal generating stations shall be allowed separately:*

*Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc, subject to prudence check. The details regarding the same shall be furnished along with the petition...*”

7.63 The Petitioner has projected the water charges for the MYT Period based on the estimated billable water charges for Financial Year 2016-17.

7.64 The calculation details of yearly water charges based on daily consumption is provided in the table below:

**Table 82 Additional Water Charges (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner**

Yearly withdrawn of water (MG)	Bill Rate (Rs./MG)	Cost of Water
7739.10	4,500	3.48

7.65 Further the Petitioner has not considered any escalation on water charges during the control period, as the same is allowed to the extent actually incurred. The Petitioner will claim the actual water charges incurred for the financial years in its True-up Petition in line with Regulation 7.46 of the JSERC Generation Regulations, 2015.

7.66 Accordingly, the details of water charges claimed for the control period from FY 2016-17 to 2020-21 is detailed in the table below:

**Table 83 Water Charges for the Control Period of Unit 1 and Unit 2 submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Water Charges (Rs. Cr)	3.48	3.48	3.48	3.48	3.48

*Commission’s Analysis*

7.67 The Commission has reviewed the submissions of the Petitioner as far as additional water charges as concerned.

7.68 JSERC Generation Tariff Regulations, 2015 specifies the treatment of water charges. The relevant extracts from the regulation are reproduced below:

*“7.46 The Water Charges and capital spares for thermal generating stations shall be allowed separately:*

*Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:*

*Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance as per Clause 7.47 of the Regulation or special allowance as per Clause 7.10 and 7.11 of the Regulation or claimed as a part of additional capitalization or consumption of stores and spares and renovation and modernization.”*

- 7.69 The Commission asked for the details of type of water plant and other specifications as per the above mentioned regulation. After considering the submissions of the petitioner the Commission has provisionally approved the water charges for both the units for the second control period as per submissions of the petitioner. These amounts are subject to true up in the respective years in future.
- 7.70 Accordingly, the details of water charges approved for the control period from FY 2016-17 to 2020-21 is detailed in the table below:

**Table 84 Water Charges for the Control Period of Unit 1 and Unit 2 submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Water Charges (Rs. Cr)	3.48	3.48	3.48	3.48	3.48

### **Annual Fixed Charges**

- 7.71 Regulation 8.2 of the Generation Tariff Regulations, 2015 states that the annual fixed charges of a thermal generating station shall consist of the following:
- Return on Equity;
  - Interest and Financing Charges on Loan Capital;
  - Depreciation;
  - Operation and Maintenance Expenses;
  - Interest Charges on Working Capital; and

- 7.72 The tables below show the annual fixed charges approved by the Commission for each unit for the entire capacity of 270 MW.

**Table 85 Annual Fixed Charges of Unit 1 for 270 MW approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	82.37	82.37	82.37	82.37	82.37
Interest on Loan	121.65	110.84	100.02	89.21	78.39

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Return on Equity (pre -tax)	70.62	70.62	70.62	70.62	70.62
O&M Expenses	72.01	75.56	79.28	83.19	87.28
Water Charges	1.74	1.74	1.74	1.74	1.74
Interest on Working Capital	24.31	24.28	24.27	24.26	24.27
<b>Annual Fixed Charges</b>	<b>372.71</b>	<b>365.41</b>	<b>358.30</b>	<b>351.39</b>	<b>344.68</b>

**Table 86 Annual Fixed Charges of Unit 2 for 270 MW approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	83.15	83.15	83.15	83.15	83.15
Interest on Loan	127.42	116.38	105.34	94.30	83.25
Return on Equity (pre -tax)	69.79	69.79	69.79	69.79	69.79
O&M Expenses	72.01	75.56	79.28	83.19	87.28
Water Charges	1.74	1.74	1.74	1.74	1.74
Interest on Working Capital	24.46	24.43	24.40	24.39	24.40
<b>Annual Fixed Charges</b>	<b>378.57</b>	<b>371.04</b>	<b>363.70</b>	<b>356.55</b>	<b>349.61</b>

## Approved Tariff for Unit 1 and Unit 2

### *Tariff for 12% of total net capacity*

7.73 The tariff for 12% of the total net capacity shall be the variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2015) approved by the Commission in this order and as noted below:

**Table 87 Approved tariff for 12% of total net capacity for Unit 1**

Particulars	Units	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Variable cost/ Base Energy Charge Rate	Rs/kWh	1.762	1.761	1.761	1.762	1.762

**Table 88 Approved tariff for 12% of total net capacity for Unit 2**

Particulars	Units	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Variable cost/ Base Energy Charge Rate	Rs/kWh	1.764	1.764	1.764	1.764	1.764

### *Tariff for 13% of total net capacity*

7.74 The tariff for 13% of the total net capacity shall be the total tariff i.e. variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2015) and fixed charges as approved by the Commission in this order as noted below:

**Table 89 Approved tariff for 13% of total net capacity for Unit 1– variable cost**

Particulars	Units	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Variable cost/ Base Energy Charge Rate	Rs/kWh	1.762	1.761	1.761	1.762	1.762

**Table 90 Approved tariff for 13% of total net capacity for Unit 2– variable cost**

Particulars	Units	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Variable cost/ Base Energy Charge Rate	Rs/kWh	1.764	1.764	1.764	1.764	1.764

**Table 91 Approved tariff for 13% of total net capacity for Unit 1– fixed charges**

Description	Derivation	Unit	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Capacity	A	MW	270	270	270	270	270
Auxiliary Consumption	B	%	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1 - B)$	MW	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	MW	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	MW	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	Rs Cr	372.71	365.41	358.30	351.39	344.68
Annual Fixed Charges/MW	$G = F/E$	Rs Cr/MW	1.72	1.69	1.66	1.63	1.59
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	MW	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$	Rs. Cr	55.06	53.98	52.93	51.91	50.92

**Table 92 Approved tariff for 13% of total net capacity Unit 2– fixed charges**

Description	Derivation	Unit	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Capacity	A	MW	270	270	270	270	270
Auxiliary Consumption	B	%	9.00%	9.00%	9.00%	9.00%	9.00%
Net Capacity	$C = A \times (1 - B)$	MW	245.70	245.70	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	$D = C \times 12\%$	MW	29.48	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	$E = C - D$	MW	216.22	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	Rs Cr	378.57	371.04	363.70	356.55	349.61
Annual Fixed Charges/MW	$G = F/E$	Rs Cr/MW	1.75	1.72	1.68	1.65	1.62

APNRL Order on True Up for FY 2014-15 and FY 2015-16, Business Plan, ARR and Tariff for  
MYT period FY 2016-17 to FY 2020-21

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Description	Derivation	Unit	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY2020-21
13% of Net Capacity for supply to JUVNL at full tariff	$H = C \times 13\%$	MW	31.94	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	$I = G \times H$	Rs Cr	55.92	54.81	53.73	52.67	51.65

## **A8: DIRECTIVES**

### **Detailed Project Report (DPR)**

8.1 The Petitioner has submitted DPR of schemes that has been proposed along with the Petition. In the DPRs, the Petitioner has submitted details about the project along with costs and have also worked out the impact of such schemes. The Commission has observed that such analysis and costs have not been supported by rate reasonability and should have approval of the competent authority of the Petitioner. The Petitioner should provide supporting documents in the form of tendered rates, order for work carried out previously, quotations etc., then only it would be considered.

### **Re-negotiation of high cost loans**

8.2 The Commission has observed that the rate of interests on some loans availed by the Petitioner are in excess of 15%. Looking at the falling interest rates in the country, the Petitioner should look at means to re-finance such loans or re-negotiate the rates of interests on such loans. The Commission directs the Petitioner to make all out efforts in this regard and submit along with the next tariff petition the steps taken by it towards the same, failing which the Commission may be constrained to disallow interest on high cost loans.

### **Filing of True-Up Petition**

8.3 The Commission directs the Petitioner to file the true up for the FY 2016-17 and APR petition for FY 2017-18 within two months from the date of issuance of this order. Further, the Petitioner should adhere to the timelines as provided in the JSERC Generation tariff Regulations 2015, in future.

### **Transit Loss**

8.4 The Commission directs the Petitioner to submit actual figures, duly authenticated by a Chartered Accountant, of transit loss for primary fuel i.e. coal, failing which the Commission may be constrained to disallow any transit loss incurred by the Petitioner.

**This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 19<sup>th</sup> day of February, 2018.**

Date: 19 February, 2018

Place: Ranchi

Sd/-  
**(R. N. Singh)**  
**MEMBER (Engg.)**

Sd/-  
**(Dr. Arbind Prasad)**  
**CHAIRPERSON**

## A9: ANNEXURES

### Annexure 1: List of participating members of public in the public hearing

Sl. No.	Name S/Shri	Address / Organisation if any
1	Rishi Singh	Deloitte (Consultant)
2	Ishan Srivastava	Deloitte (Consultant)
3	Kushal Mandal	Dainik Bhaskar
4	Rana Pratap Singh	Prabhat Khabar
5	Sandip Agrawal	APNRL
6	Mohit Goyal	APNRL
7	Mrinal Navendu	APNRL
8	Mani shankar	APNRL
9	Niraj Kumar	Kadru, Ranchi
10	Ravi Shankar	Ganiriya
11	Sanjeev Kumar Singh	Ganiriya
12	Sunil Kumar Thakur	JBVNL - CE (C&R)
13	Anita Prasad	JBVNL
14	Paghu Mahato	Ranchi
15	Rishin Nandan	ESE/C&R, JBVNL
16	Sachin Agarwal	Director, APNRL
17	Chotu Nath	Kadru, Ranchi
18	Gopal Meewal	Chowka
19	Leaquat Ali	Chandwa
20	Ravi Singh	Srirampur
21	Sanoj Sahu	Ranchi
22	Biraj Kumar	Adityapur
23	R. K. Singh	Kandra
24	Himanshu Kumar	Adityapur
25	R. Sharma	Sakchi, Jamshedpur
26	Eshan Singh	Ranchi
27	Sanjeev Kumar	Kandra
28	N. Adhikami	Kandra
29	Sujeet Kumar	Dhurwa, Ranchi
30	Ajay Kumar	Shri Rampur
31	Manoj Sharma	Shri Rampur
32	A. K. Shrivastava	Shri Rampur